Sacfojiu Rayal 1804

A

TREATISE

ON

FEBRILE DISEASES,

INCLUDING

INTERMITTING, REMITTING, AND CONTINUED FEVERS; ERUPTIVE FEVERS; INFLAMMATIONS; HEMORRHAGIES; AND THE PROFLUVIA;

IN WHICH AN ATTEMPT IS MADE

TO PRESENT, AT ONE VIEW, WHATEVER, IN THE PRESENT STATE OF MEDICINE, IT IS REQUISITE FOR THE PHYSICIAN TO KNOW

RESPECTING THE

SYMPTOMS, CAUSES, AND CURE

OF

THOSE DISEASES;

WITH

EXPERIMENTAL ESSAYS,

On certain Febrile Symptoms, on the Nature of Inflammation, and on the Manner on which Opium and Tobacco act on the Living Animal Body.

BY

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PREFACE.

IT was intended, as expressed in a former volume, that the subject of the present should form two volumes. I found, however, that by the following deviations from my original plan, the whole might be comprised in one. My intention was, at the end of the work to give a more detailed view of the Nosology of Febrile Diseases; this I have omitted, as the principal observations I wished to make on the subject are to be found in the general Introduction, or in other passages. I have considered under one head the different species of hemorrhagies, (other reasons for which are given in the 424th page of this volume) by which the space they occupy will be much lessened; and some other parts of the subject I have condensed more than I intended. One disease I have passed over in silence, and shall here therefore make the few observations on it which appear to me necessary, I mean Catarrh. In its common and mildest form almost every person, whether of the medical profession or not, is acquainted both with its symptoms and mode of treatment. The epidemic catarrh is a more serious disease and less generally known, but, like common catarrh, it only proves

proves dangerous when it runs into some of the diseases which I have treated of at length, chiefly the different species of simple fever, pneumonia, peripneumonia notha, and phthisis; and as I have pointed out the manner in which the treatment of these diseases is suited to different circumstances and habits, what has been said of them will be found readily applicable to the more alarming forms of catarrh, in which they supervene. As to the milder form of epidemic catarrh, so much has been written on it, during the last twelvemonth, in every part of Britain, that any observations on it at this time seem to be superfluous.

I have endeavoured in this volume to profit by some judicious observations made on the preceding volumes, and have supplied the want of accurate references by giving an alphabetical catalogue of the books, with the editions referred to throughout the work.

I have been censured for having in a former volume allotted so many pages to the small-pox. Had the observations on this disease been published so late as the present date, I should probably have curtailed them; but, even on the supposition that the small-pox shall be wholly banished, the accurate knowledge we have acquired of this disease will still be

be found of the first importance. No other of the exanthemata has demanded so much attention and been observed with so much care, and such is the similarity between the individual diseases of this order, that did the small-pox no longer exist, in observing the phenomena and improving the treatment of the other exanthemata, we should long have occasion to refer to the observations which have been made on it.

My object in undertaking this work I have explained in the prefaces to the first and second volumes, to present, at one view, all the useful knowledge we possess of febrile diseases, of perhaps more than two thirds of the most important diseases which come under the physician's care. If this object be tolerably well answered, the extensive nature of the work and the great labour it has cost continued, for the most part amidst other unavoidable occupations, for more than ten years, will, I hope, be admitted as an apology for less important blemishes.

The same circumstances which have delayed the publication of this volume a year and a half beyond the time first proposed, will for the present prevent my entering on the work mentioned in the preface to the second volume.

ERRATA.

ERRATA.

As the Author was deprived of an opportunity of superintending the Press, the reader, he hopes, will excuse the following errors, and take the trouble to correct them with the pen.

Page
21, l. 12, dele *not.*
27, l. 7, for *Cause*, r. *Causes.*
31, l. 19, for *conclude*, r. *concludes.*
46, l. 21, after *no*, insert *other.*
51, l. last but one, for *quodam*, r. *quadam*, and for *thoraces*, r. *thoracis.*
66, l. 6, dele ;—l. 7, after period, insert ;
68, l 18, after suppuration, dele , after ulceration, insert ,—l. 23 and 24, dele *if the symptoms continue severe without being very violent.*
73, l. 2, for *found*, r. *formed*—l. 14, after *bursting*, insert *into the substance of the lungs.*
85, last line but two, after *dry*, insert *or.*
89, l. last, for *have been*, r. *are sometimes*—l. 9, for ?, r. .
90, l. 3, for *Scervius*, r. *Servius.*
92, l. 14, for *differs*, r. *differ.*
98, l. 21, after *maligna*, insert ;
101, l. 10 and 11, for *anthelmintices*, r. *anthelmintics*—and l. 13, for *but*, r. *that.*
103, l. 3 from bottom, for *do*, r. *does.*
131, l. 17, for *cathartics*, r. *catharsis*—and l. 21, for *it is*, r. *they are.*
150, l. 14, dele *in.*
182, l 4, for *usual*, r. *unusual.*
184, l. 14, for *deserves*, r. *deserve.*
204, l. 5 from bottom, for *burst*, r. *bursts.*
220, l. 10, dele , after *do.*
243, l. 6, before *hepatitis*, insert *chronic.*
271, l. 20, for *in*, r. *by.*
274, l. 11 and 12, place *increased by external heat*, after, *pain about the joints.*
289, l. 18, for *phlegmasiæ*, r. *phlegmasia.*

Page
303, l. 22, for *wandering*, r. *misplaced*, and the same in the next page, l. 16.
317, l. 16, after *stomach* insert ,—l. 17, after *particular*, dele ,
321, l. 13, for *confirmation*, r. *conformation.*
330, l. 6, dele *other.*
340, add to the note, *Ægyptiorum.*
364, l. 15, at the beginning of the paragraph, insert, *In short.*
396, l. 18, for *is*, r. *was*—and l. 19, for *be*, r. *was.*
397, l. 1, for *has*, r. *had*—l. 8, dele *that*—and l. 10, before *the*, insert *that.*
406, top, insert, *2d. Of the Treatment of the Irregular Gout*—and l. 17, dele 1.
408, l. 18, dele 1.
417, l. 8, for *it*, r. *this matter.*
430, l. 19, after *these*, insert *last.*
425, and 431, &c. r. *Hæmatemesis.*
440, l. 20, for *this*, r. *such an effusion.*
449, l. 15, dele *however.*
471, l. 20 and 22, *and* and *but* should change places.
501, l. 5, dele *from these observations.*
514, l. 11, after *free*, insert ,—l. 12, after *slight*, dele ,
515, l. last, dele *that.*
531, l. 14 and 15, *cathartics* and *catharsis* should change places.
550, l. 1, dele *that.*
602, l. 1, for *rarely*, r. *rare.*
603, l. 1, for *appearance*, r. *appearances.*
604, l. 22, for *were*, r. *was.*
620, l. 11, before *means*, insert *first set of.*
659, l. 18, for *hypothesis*, r. *hypotheses.*
701, l. 17, before *impression*, insert *first.*

Dr. Kinglake (see his Treatise on the Gout) is wrong in supposing himself the first who regarded the gout as of the same nature with the other phlegmasiæ. The 352d page of this volume was printed before I read either Dr. Kinglake's Treatise, or any of his papers on the subject. This I mention, that he may not suppose my censure of those who have maintained this opinion aimed at him.

A TREATISE, &c.

SECT. IV.

Of the Cynanche Trachealis.

THE only form of Cynanche which remains to be considered, is the Cynanche Trachealis; Dr. Cullen's definition of which has been given.

It seems proper in the present state of medical knowledge to divide this complaint into two varieties; that which we sometimes meet with in adults, and that which attacks children from the time they are weaned till about twelve years of age.

The former of these complaints, if indeed they are different complaints, has been long known, although it rarely occurs, now and then appearing alone, rather more frequently complicated with the cynanche tonsillaris or maligna.

Its presence is readily known from the

definition which has been given. The voice and cough, if there be any, for a cough does not constantly attend the disease, have a peculiar ringing sound. The respiration is difficult, sonorous, and attended with a sense of tightness and pain about the larynx. On inspecting the fauces we perceive nothing uncommon, they are sometimes redder than usual, but very seldom much swelled. When there is much redness or swelling, the disease must be regarded as a combination of the cynanche trachealis and tonsillaris. The eyes are red, the face is flushed, and as the difficulty of breathing increases, becomes swelled and purple. These symptoms never continue long without considerably affecting the pulse, and the fever which attends them is a synocha, at least at its commencement. Towards the termination of the complaint, when the symptoms have been considerable, the pulse and strength sink.

One of the chief diagnostic symptoms of cynanche trachealis is, that however great the affection of the larynx and the dyspnœa may be, the deglutition is free. It has long been a maxim in medicine, even before

there

there were any distinct ideas respecting this complaint, that that species of cynanche in which the respiration is impeded without any redness or swelling appearing in the fauces, is most to be dreaded.* It will not be necessary to say more of the symptoms of this complaint as it appears in adults. The degree of danger is best known from the degree of dyspnœa. Suffocation is the termination which we dread.

With regard to the other variety of the cynanche trachealis, that which affects children only and which has not till lately been accurately described, it will be necessary to consider its symptoms more at length. It is a much more frequent complaint. Among the vulgar in England it is termed the croup or the rising of the lights. In some parts of Britain it is also known by the names of the choak or the stuffing. The reader will find it mentioned by authors

* Gravis et illa species anginæ, (Horstius observes) cum gutturis interni musculi sic inflammantur, ut neque in faucibus neque in cervice, quidpiam adpareat, unde Celso merito pestiferus, Galeno morbus extreme peracutus, Hippocrate vero lethalis dicitur.

under a variety of appellations, morbus strangulatorius, cynanche stridula, angina epidemica, suffocatio stridula, asthma infantum,* angina polyposa, and some others.

There has been some dispute concerning the nature of the croup. It will be proper to make some observations on this part of the subject after a more detailed account of the symptoms has been laid before the reader.

Of the Symptoms of the Cynanche Trachealis Infantum.

To begin with the local symptoms, which are generally the first that shew themselves, it may be observed, that this complaint often makes its attack merely with a degree of dyspnœa, which often comes on very suddenly. As this affection increases, the breathing is performed with a wheezing sound, as if the passage of the air were much straitened.

The patient at the same time, if he is old enough to give an account of his feelings,

* We shall find reason to believe that the complaint known by this name has been improperly considered as the same with the croup.

complains

complains of a sense of tightness about the larynx, generally accompanied with some degree of pain. Some pain may often be perceived on turning the head, when there is no pain felt while it is still.

The dyspnœa sometimes increases rapidly, in other cases so slowly that the patient shall complain of some difficulty of breathing for several days before he is seriously ill. Together with the wheezing there is sometimes, though rarely, a degree of rattling in the breathing. The state of the breathing at length becomes such, that the shoulders are raised at each inspiration, the abdominal muscles act strongly, and there is a violent alternate elevation and depression of the ribs and scapulæ. The breath at the commencement of the disease is generally free from fetor, but seldom remains so in its progress.

The voice has a shrill ringing sound, which has been compared to a noise issuing from a brazen tube, or the crowing of a cock. A cough very generally attends the cynanche trachealis of children, which also

partakes remarkably of the same sound.* The cough is generally dry. When there is any expectoration, it has frequently, especially after the disease has lasted for some time, a purulent appearance, and is often mixed with specks of florid blood, The purulent appearance of the sputa is an unfavourable symptom; they sometimes have more of a white cheesey appearance, and flakes are sometimes thrown up by coughing, resembling pieces of a membrane which we shall find lines the trachea in this complaint, the expulsion of which often brings considerable relief.†

There is generally nothing particular to be observed in the fauces. Sometimes they look red and even a little swelled, at other times the uvula, velum pendulum palati, and

* Dr. Rush says he has often seen the croupy cough remain several days after all other symptoms of the complaint were gone. I have known this cough return in those who had formerly laboured under the croup on exposure to cold, without any other symptom of the disease, and go off without any remedy.

† Michaelis says he has seen the patient suddenly restored to health by the excretion of this membrane. Michaelis de Ang. Polyp.

tonsils

tonsils are intensely red, but without swelling; and we sometimes observe a little puslike matter in the fauces, similar to that spit up.

As in the cynanche trachealis of adults, the deglutition is scarcely ever difficult or even at all impeded.

The appearance of the face is the same as in other instances of great dyspnœa, at first red and swelled; sooner or later, if the complaint increases, becoming purple and livid. There is often a degree of soft white swelling externally about the larynx, which sometimes spreads along the course of the trachea. The hands and feet too are often affected with the same kind of swelling.

Such are the local symptoms of the croup, and those which may be said to constitute the disease, the general symptoms not differing materially from those attending most other phlegmasiæ.

It has already been observed, that symptoms of general derangement are seldom the first which shew themselves in this disease; in some cases, however, they are the first of which the patient complains, being oppressed

with a general lassitude and languor before the dyspnœa becomes very troublesome; this however is comparatively rare.

As soon as the difficulty of breathing is considerable, the pulse becomes frequent, strong, and hard, and the patient is troubled with head-ache; he soon becomes restless, with a hot parched skin, great thirst, and a white and often very foul tongue.

The urine is generally limpid, discharged in small quantity, and sometimes with difficulty. In the progress of the disease it is passed in greater quantity, is turbid, and towards the favourable termination generally deposits a copious sediment, which by some has been attributed to the absorption of purulent matter from the trachea.

The bowels are generally costive during the whole of the complaint, and often much inflated. Vomiting is not a very common attendant on the croup; when it does occur, much viscid matter, sometimes mixed with bile, is frequently discharged by it.

If the symptoms prove obstinate, the pulse begins to lose its strength and hard-

ness,

ness, and becomes weak and intermitting or tremulous, and as the fatal termination approaches, remarkably frequent.

In the cynanche trachealis, as in most other phlegmasiæ, however alarming the other symptoms of fever may be, there is seldom any delirium. The patient generally retains his senses to the last, except that a degree of coma frequently supervenes.

If the symptoms do not remit, unless they be very mild, the patient seldom survives more than three or four days, and frequently dies within four and twenty hours, or even less, from the attack of the disease. In the more lingering cases the symptoms gradually increase, and many of those which precede death in other febrile diseases supervene. The mouth becomes very foul; the respiration more hurried, small, and difficult; the restlessness and dejection increase; and under these circumstances that species of delirium which is most allied to coma sometimes supervenes, the patient seeming stupid, and frequently muttering to himself with marks of great impatience. The pulse in such cases is often

near

near two hundred, tremulous, and irregular. At length it can hardly be felt, the extremities become cold, and the patient soon expires.

Death sometimes approaches in a different way; profuse sweats and fainting fits precede the coldness of the extremities. The eyes appear glazed, the lips, tongue, mouth, and throat parched, and the patient falls into general convulsions, which prove the immediate forerunner of death.

Some of Dr. Molloy's patients* had a tumor behind the ears, which run speedily to mortification, and many, he observes, had prodigious weeping behind the ears of a very corrosive nature.† The ceasing of the cough is to be ranked among the fatal symptoms, as we might, a priori, have supposed, since its absence can only be attributed to increasing insensibility, and robs the patient

* Their complaint seems to have been rather the acute asthma, than the croup.

† Dr. Bard saw the cynanche maligna complicated with croup epidemic. In some patients, instead of the croupy symptoms, there were ulcers behind the ears. See the American Phil. Transact. vol. i.

of

of one chance of life, by depriving him of the chief means of removing the matter which clogs the trachea and often occasions suffocation.

But whatever accidental symptoms, if I may use the expression, may appear in particular cases, if the strength fail, the breathing become remarkably small and hurried, if the face assume a livid and cadaverous appearance, if the pulse flutter, and the extremities become cold, we know that death is at hand.

Suffocation may take place at all periods of the disease. When the patient dies on the first or second day, it is generally from this cause. Death from other causes seldom happens earlier than the third, often on the fourth or fifth day, or later.

Certain symptoms in this, as in other febrile diseases, are frequently attended with a remission, sometimes with complete recovery. The chief of these is a spontaneous flow of sweat, which sometimes lasts for several days. Spontaneous vomiting and diarrhœa also sometimes mitigate the symptoms of the croup. The same may be said

of

of a discharge of phlegm from the nose, (Dr. Bard says salivation sometimes proves critical) even coughing and eructation often bring relief. A copious sediment from the urine is also regarded as critical in this complaint. Dr. Rush observes, that he has frequently seen an eruption of little red blotches in the croup which generally brought relief. He sometimes observed them appear and disappear several times in the course of the disease.

Upon the whole, whatever be the attending symptoms, if the pulse become fuller, more steady, and less frequent, the breathing freer and less hurried, the peculiar sound of the voice and cough begin to wear off, and the patient appear less anxious and oppressed, the prognosis is good. We cannot however with certainty rely on the favourable change till the remission has lasted a considerable time, for after the most favourable appearances the disease has returned with greater violence and proved fatal.

The disease described by Dr. Miller, under the name of acute asthma, which

seems

seems at least allied to the disease we are considering, often wholly assumes the intermitting form, as appears both from his observations and those of Dr. Molloy and Dr. Rush. It is on this account that Dr. Miller terms the complaint asthma. He adds acute, to distinguish it from chronic asthma, into which, he observes, he has seen it changed, the patient ever after remaining subject to the latter disease.

It is of the first importance to distinguish a remission, from a complete solution of the disease; a mistake here, by inducing the practitioner to abandon the means of cure too early, has frequently proved fatal. All that can be said on this head is, that where the patient still remains dejected and oppressed, however free the breathing may be, we have reason to dread a return of the complaint, and should treat him accordingly; and the more the symptoms have inclined to those of acute asthma, (of the diagnosis between which and the croup I am about to speak more particularly) the more reason we have to dread that the relief will only be temporary.

Dr.

Dr. Home divides the croup into two varieties, the one he terms the inflammatory, the other the purulent. In the former, the pulse is strong, the face florid, the drought great, and the complaint, Dr. Home observes, is relieved by evacuations; in the other, the pulse is frequent and soft, the debility great, the tongue moist, the drought less than in the former case, the anxiety much greater, and here, he observes, evacuations hasten death. It would appear, however, that these ought rather to be esteemed different stages than varieties of the disease, the former, if the symptoms are not soon relieved, degenerating into the latter.

Such is the general course of the Cynanche Trachealis Infantum; in it, as in almost all other complaints, we occasionally meet with certain anomala, which do not deserve to form part of the history of the disease. Thus it has appeared unaccompanied by fever, as observed by Dr. Rush and others,* the shrillness of the voice and cough,

* Dr. Dixon gives an account of a case in which the cynanche

cough, Dr. Home observes, sometimes goes off before death; even the leading symptoms, the dyspnœa and cough, are occasionally absent during some part of the disease. It may be mentioned among the anomala of the croup, that the membrane excreted by coughing has sometimes appeared black and gangrenous.

I have already observed that the croup and the acute asthma of Dr. Miller and others, usually regarded as the same disease, are suspected by some to be of a very different nature, and it has even been asserted that a perfect diagnosis between them may be obtained. The following is offered by Michaelis.

All the convulsive affections, he observes, are more violent in the acute asthma, than in the croup. In the former the difficulty of breathing is greater. The acute asthma makes its attack almost instantaneously, giving no warning of its approach; the croup comes on more gradually. In the

cynanche trachealis appeared as a chronic complaint in an adult. See a paper by Dr. Dixon, in the 9th vol. of the Medical Communications.

acute

acute asthma the peculiar shrillness of the voice and the pain of the trachea increased on pressure, almost constant attendants on the croup, are never observed. The acute asthma observes certain periods. In this complaint the urine is thin and watery; in the croup at the beginning red, afterwards turbid and white. The pulse in the acute asthma is small and contracted; in the croup at its commencement hard, full, and inflammatory, afterwards soft and weak.

The reader will find from what Dr. Cullen says in the last edition of his Nosology, that notwithstanding the attempt of Michaelis to distinguish these complaints, with which he must have been acquainted, as he there mentions Michaelis's treatise, he still seems to regard them as the same disease. The observations of some succeeding authors, however, seem to confirm those of Michaelis, and improve the diagnosis he has offered. The acute asthma, says Dr. Rush, or as he calls it, the Cynanche Trachealis Spasmodica, comes on suddenly, and generally in the night. It has frequent and perfect intermissions for hours, and in some instances

for

for days, without the least sensible discharge from the trachea, and it yields to anti-spasmodic remedies, particularly to the warm bath. The croup, or, as Dr. Rush calls it, the cynanche trachealis humida, comes on gradually, and most commonly in the day time. It continues or increases for several days without any remarkable remission or even abatement of the symptoms. It is accompanied with a discharge of phlegm or mucus from the trachea or together with the stools, and does not yield to anti-spasmodics.

When the foregoing circumstances are well marked, they will generally be sufficient to distinguish the complaints; but they are far from always being so. The croup, in particular, often assumes more or less of the intermitting form; and with regard to the latter part of the diagnosis, a diagnosis from the effects of remedies is always objectionable, and particularly so in a disease so rapid as the croup. The above diagnosis however will frequently enable us to distinguish the diseases, and must serve till experience has furnished a better. To the cir-

cumstances mentioned, it might be added, that the voice in the acute asthma is often hoarse, and the breathing not wheezing but rattling.

It is asserted by some that the peculiar membrane lining the trachea in the croup, is not found in those who die of acute asthma. When I cast my eyes on Dr. Miller's chapter, entitled, Dissections, I expected to see this point determined, but Dr. Miller gives us an account of only two dissections, and of these so imperfect an account, that it is impossible to know whether or not the membrane was present.

From the observations of others, however, we have reason to believe that the membrane is not formed in the acute asthma. Dr. Rush, in his first publication on these complaints, confounds them; but in a later treatise, in which he attempts the diagnosis, gives us an account of the dissection of a child that died of the acute asthma, in which no membrane nor even mucus was found in the trachea, this organ and the lungs appearing in a perfectly sound state.

I

I believe the membrane, says Dr. Rush,* to be the effect of the croup only, and not an accidental effect of the spasmodic asthma as I once believed. The sudden manner in which the convulsive asthma makes its attack, and its so frequently assuming an intermitting form, oppose the idea of its being connected with the formation of a membrane in the trachea.

It is to be observed however, that, contrary to what is generally supposed, the symptoms of croup are not essentially connected with the presence of this membrane. The ringing voice has often disappeared, especially towards the fatal termination, where the membrane certainly was present. This happened in the sixth case related by Dr. Home. Dr. Bard observes, that all the symptoms of the croup often intermitted where the membrane was found after death. Nor have we the least reason to suppose the membrane formed in all cases as soon as the voice and cough become ringing. A case is related in the Philosophical Transactions of

* See his Medical Obs. and Inq. vol. 1.

a boy who died of a phthisis; a membrane was found in the trachea, pieces had often been spit up, but no shrillness of voice is mentioned among the symptoms. The reader will find a similar case related by Dr. Dixon, in the 9th vol. of the Med. Commun. in which the membrane was repeatedly formed and spit up without any shrillness of voice; and Dr. Bard, on the other hand, gives a case in which the symptoms of croup were well marked where no membrane but merely signs of inflammation were found in the trachea.

Michaelis has not only attempted to distinguish the croup and acute asthma, but also offers a diagnosis between the former and mere inflammation of the trachea. But in this instance he has succeeded worse than in the other.

The cynanche trachealis, he observes, may easily be distinguished from the croup. In the former there is no symptom of a preternatural membrane present in the trachea and bronchiæ. But is not the great dyspnœa one of the principal symptoms of its presence? But the dyspnœa, he proceeds, can be

be accounted for by the force and violence of the inflammation independently of any other supposition. But are there not the same symptoms of inflamed trachea in all cases of well formed croup? In the cynanche trachealis, properly so called, he continues, there is wanting that peculiar shrillness of voice which we observe in the croup, the angina polyposa, or membranacea, as Michaelis calls it. But other authors have made different observations; Dr. Cullen remarks, that the ringing voice does not attend the cynanche trachealis of adults. In the cynanche trachealis, Michaelis adds, there is a violent pain about the trachea; in the croup but very little. Different degrees of the same symptom, it is evident, must afford a diagnosis little to be depended on. The reader besides will recollect that the pain in the croup, as observed above, is increased on pressure; a circumstance we shall find peculiarly characteristic of pain proceeding from inflammation.

There is one case which it is of much consequence to distinguish from the croup, namely, the symptoms produced by the

introduction of an extraneous body into the trachea. Mr. Balfour told me, says Dr. Home, that he attended a child in a disease which, from the similarity of voice, appeared to him the croup. The child died, and a piece of shell which he had sucked in with the breath was found lying across the trachea, about an inch below the glottis, and the membrane was inflamed and dry. Here even Michaelis confesses the diagnosis to be extremely difficult, and that the most acute may find it impossible to distinguish the two cases. But even here, he observes, a cautious physician may proceed with safety; he should enquire with much care whether or not the patient feels any pain, whether it is acute, and in what place it is seated, if he feels no pain, or if the seat of the pain is not in the trachea but in some of its branches, or if it changes its place, being felt during coughing in the upper, and at other times in the interior part of the trachea, or, lastly, if it occupy the trachea and it solely, but is, extremely acute and circumscribed, for if such be the symptoms the case is not to be regarded as croup, but

as

symptoms occasioned by an extraneous body in the trachea. If even these symptoms, he adds, should leave me in doubt, I would immediately have recourse to bronchotomy, by which the nature of the disease would be discovered, and the noxious body, whether produced by or introduced into the trachea, removed.

When a similar set of symptoms, which sometimes happens, arises not from the introduction of an extraneous body into the trachea, but from the generation of some excrescence or concretion different from that which takes place in the croup, it is, if possible, more difficult to ascertain the nature of the case.

With regard to the manner of distinguishing the croup from other diseases, such as cynanche maligna, hooping cough, chronic asthma, epilepsy, histeria, pneumonia, &c. with which it seems to have sometimes been confounded, it is only necessary to say, that if we are acquainted with the symptoms of these complaints, it is impossible to mistake them for the croup.

Appearances on Dissection.

ON laying open the trachea of those who die of the croup, there is a membrane lining but scarcely adhering to it, for it may always be easily separated without destroying its shape. It comes out in the form of a tube exactly adapted to the cavity it lay in. In many cases indeed it cannot be said to adhere at all, and there is a considerable quantity of puslike matter lying between it and the sides of the trachea. This membrane often extends beyond the division of the trachea, lining the large branches of the bronchiæ, and loosely adhering to them. The purulent matter extends beyond the membrane often into the smallest branches of the bronchiæ, and even in some instances into the air vesicles. Mr. Wood found it in these vesicles in the 7th and 8th cases related by Dr. Home. On removing it there is no appearance of ulceration in the coats of the trachea and bronchiæ, but the traces of inflammation are in general very obvious, and sometimes extend, Burserius observes, to the very extremities of the bronchiæ

bronchiæ. It has sometimes happened, as in more than one dissection recorded by Dr. Home, that no traces of inflammation could be observed; but this is comparatively rare.

By squeezing the lungs a considerable quantity of a whitish glutinous fluid may sometimes be forced out. In different cases of the cynanche trachealis the lungs assume, according to Burserius, all the different appearances observed after pneumonia, which are soon to be laid before the reader. Sometimes, however, they are quite sound. The appearances of the lungs in those who die of the croup, Michaelis observes, are various; sometimes they are sound, sometimes slightly inflamed, sometimes there is a sanious matter extravasated in different parts of them, sometimes the matter found in them is purulent, and sometimes merely a watery fluid, the quantity of which is often considerable.

Small polypous concretions are often found in the vessels of the lungs and in the right side of the heart; never, Burserius observes, in the left side or in the aorta. These concretions, I have already had occa-

sion

sion to observe, seem to be formed in articulo mortis, and the reason of their not being found in this case in the left side of the heart, seems to be, that the blood is chiefly collected in the right, as happens in all cases where death is induced by suffocation. It is also owing to the dyspnœa which precedes death that the vessels of the head are generally found very turgid in those who die of the croup.

The preternatural membrane presents different appearances in different cases. Sometimes, Michaelis observes, it is as thin as paper, in other cases so thick that it almost fills up the whole cavity of the trachea. It is often of different thickness in different parts, and the thickest part is sometimes the uppermost and sometimes the reverse. In some cases it is soft and pulpy, in other cases so firm and tough that it will bear maceration in water for several days; but however tough it is in the trachea, it becomes more tender in the bronchiæ and is always soft before its termination. In some cases it is quite white, in others marked with red spots, and it is now and then

uniformly

uniformly of a dark colour, and sometimes even black. Some have thought this membrane possessed a vascular, others, a fibrous structure; the former opinion appears erroneous, and the latter is not confirmed by general observation.

Of the Remote Cause of the Cynanche Trachealis.

Little can be said with certainty concerning the causes of the croup, which is not surprising, since it is only lately that it has demanded much of the attention of practitioners. The chief subjects of this complaint are children from the time they are weaned till about twelve or thirteen years of age. After they are weaned, the younger they are the more they are subject to it. Some have thought it most common in marshy countries and near the coast.

It is very generally agreed that the croup is not contagious, but many believe it to be hereditary.

As in other particulars, it agrees with the phlegmasiæ, in being most apt to attack those who have already laboured under it. It is an observation, however, which I have heard

heard made by more than one practitioner, that after the first attack the disease generally appears in a milder form.*

The chief exciting cause of the croup seems to be the application of cold. It is more frequent in winter and spring than at other seasons, and seems particularly apt to arise from sudden changes in the weather. It is not improbable that certain states of the alimentary canal may assist in producing this complaint. Underwood, in his Treatise on the Diseases of Children, observes, that the change from milk to food of harder digestion is probably sometimes the cause of the croup. The same author alledges that it may be occasioned by bad fevers or chronic complaints that greatly reduce the strength.

The acute asthma resembles the croup in its causes as well as its symptoms, the same age predisposes to both, and the application of cold seems the chief exciting cause of both. Among the exciting causes of acute asthma, Dr. Millar, with great probability,

* See Dr. Alexander's Treatise on the Croup.

ranks

ranks a laxity of the solids, indigestible ingredients in the food, and a morbid weakness of the digestive organs.

Of the Proximate Cause of the Cynanche Trachealis.

It is necessary to say something of the different opinions which have prevailed respecting the nature of this complaint.

With regard to that which refers its seat to the lungs and attributes it to an inflammation of this viscus, it will readily be admitted to deserve no attention.

The first probable opinion suggested on this subject was that proposed by Dr. Home. He believed the first seat of the disease to be in the mucous glands of the trachea, which he supposes are excited to pour out an unusual quantity of mucus. "When "there happens," he observes, "a very great "secretion of this coagulable fluid from the "glands of the trachea in children, they "are either not sufficiently attentive or too "young to spit it up. The thinner parts "are carried off during expiration, while "the remainder is thickened and compressed "by the obstruction which the narrowness "of

"of the glottis opposes to the exit of the "air from a larger canal. Every circum-"stance, he continues, encourages its con-"cretion into a solid firm membrane, while "the more internal parts of the mucus "continue still fluid, and the continual "secretion of more keeps it separated from "the parts below."

But Dr. Home explains the conversion of this mucus into pus by experiments of Sir John Pringle, the inaccuracy of which I have already had occasion to notice. We have seen besides, that the membrane may be formed without occasioning symptoms of croup; which on the other hand may exist without the formation of any membrane.

Dr. Rush of Philadelphia, in a letter to Dr. Millar, published in 1770, takes a very opposite view of the subject; so far from agreeing with Dr. Home in supposing the preternatural membrane to be the cause of all the symptoms, he regards it merely as an adventitious circumstance supervening after the disease has lasted for some time. The disease he considers merely as a spasmodic affection. But it appears, from what was said

said above, that Dr. Rush did not at first properly distinguish the acute asthma and croup.

Michaelis has attempted to point out the difference in the nature of these complaints; his opinion of the former nearly corresponds with that of Dr. Rush: with respect to the croup he agrees with Dr. Home in regarding the preternatural membrane as the cause of all the symptoms; but this membrane, instead of being concreted mucus, is composed, he maintains, of lymph, and is of precisely the same nature with the polypous concretions found in the heart and large blood-vessels. This opinion the author supports at considerable length and with a variety of arguments, for which I shall refer the reader to his work, and conclude with the following observations. These circumstances being granted, none can hesitate in ranking the preternatural membrane among the true polypi. It consists of the same matter, has the same figure, and with respect to its being thinner and less compact than polypi generally are, this is to be considered as a matter of small moment; nor

nor indeed is the difference constant, nor does it seem of more weight than that polypi are sometimes solid and sometimes hollow.

But admitting this membrane to be wholly composed of lymph, from the different circumstances attending its formation and that of polypi, and the difference of the situations in which they are placed, we cannot class them together as affections of the same nature. Besides, if all that Michaelis says of the concretion were admitted, there would still be the same objections to his opinion as to Dr. Home's. Why has this membrane existed without occasioning symptoms of croup? Why have these symptoms been observed where no membrane was found?

Dr. Cullen's opinion of this complaint was different from any of those mentioned, as the reader will infer indeed from what has already been said. He regards it as consisting of an inflammation in the larynx, combined with a spasmodic constriction of the glottis. "Though this disease," he observes, "manifestly consists in an inflam-"matory affection, it does not commonly "end

" end either in suppuration or gangrene. The " peculiar and troublesome circumstance of " the disease seems to consist in a spasm of " the muscles of the glottis, which, by in- " ducing a suffocation, prevents the com- " mon consequences of inflammation. When " this disease terminates in health it is by a " resolution of the inflammation, by a " ceasing of the spasm of the glottis, by an " expectoration of the matter exuding from " the trachea and of the crusts formed " there. And frequently it ends without " any expectoration or at least with such " only as attends an ordinary catarrh."

To this opinion, by far the most probable, some objections might still be found. Why does the disease chiefly attack children? What proof is there of the spasm of the glottis? Dr. Cullen indeed grants that suffocation sometimes happens in consequence of the obstruction occasioned by the matter collected in the trachea and its branches. But the strongest objection to Dr. Cullen's opinion is, that traces of inflammation are not always found in the trachea of those who die of this complaint. It is far from

 being

being improbable, however, that although the cynanche trachealis consists in an inflammation of the trachea, the patient may die after the inflammation is gone, the effusion which relieves the inflammation being so copious as to occasion suffocation.

Of the Treatment of Cynanche Trachealis.

It is unnecessary to give the treatment of the cynanche trachealis of adults and that of the croup separately; we have every reason to believe them the same complaint, and whether they are or not, experience has assured us that the mode of treatment in them is the same.

The observations made on the treatment of the phlegmasiæ in general still apply. It will only be necessary therefore to make such additional observations as particularly respect this complaint.

If we consider the acute asthma and croup as the same complaint, the opinion of practitioners concerning the principal means employed are so contradictory that we shall find ourselves much at a loss how to proceed. "In the inflammatory state," Dr. Home observes

observes, "bleeding appears to have been "attended with immediate good effects and "to be a powerful remedy in this situation. "This ought to be done expeditiously and "plentifully while the pulse will allow it. "It is best to take it at first with the lancet "so that a sufficient quantity may soon be "drawn off." Dr. Cullen and many others agree with Dr. Home in the advantages to be expected from blood-letting. Of all the remedies employed in this complaint, Michaelis observes, blood-letting holds unquestionably the first place. It diminishes the inflammation, which if we succeed in removing, we entirely remove the complaint. Dr. Rutty on the other hand observes, "I have tried evacuations of all kinds; "frequent bleeding and severe blistering "were of no service." And with him Dr. Rush, in his first publication, and Dr. Millar agree. It is difficult to discover, says Dr. Crawford, in his Thesis de Cynanche Stridula, in what cases Dr. Millar judged venesection proper. But it is impossible for us to read the works of these writers and believe that they are speaking of the same

 disease.

disease. The very different effects which they experienced from the same remedies might alone induce us to believe them of a different nature. The chief point to be determined is, since these complaints are different and require very different modes of treatment, how shall we ascertain the remedies to which we shall have recourse, the diagnosis between them being so imperfect? Experience has pointed out that an indiscriminate use of the lancet in all cases which have been regarded as croup is inadmissible, but it has not yet pointed out with precision the means of distinguishing the cases in which it is useful.

Without attending to the imperfect diagnosis we possess between these cases, on comparing together the observations of those who have been most conversant with the diseases we shall find, that whether the complaint be croup or acute asthma we may be guided in the employment of venesection by the state of the pulse, forif it be hard, venesection will be found useful in both.

In the true croup, when the pulse becomes soft and weak, which it does after

the

the complaint has lasted for some time, blood-letting, on which we chiefly rely at an early period, is no longer proper. "But "when the membrane is once formed," Dr. Home observes, "or the purulent matter "collected in great quantity in the lungs, "evacuations can be no longer of any use; "they rather hurt as the pulse is then weak. "Hence the reason why people differ about "the effects of evacuations in this disease; "some deeming them the only certain re-"medy, while others hold them to be de-"structive."

In the acute asthma, on the other hand, where evacuations are generally hurtful, if the pulse be strong and hard they are found beneficial. There can be little doubt, I think, of the complaint described by Mr. Russel, in his Œconomy of Nature, under the name Angina Inflammatoria Infantum, being the acute asthma. Yet he observed an abatement of the alarming symptoms after blood-letting. Dr. Rush also observes, that blood-letting relieves the acute asthma when it is accompanied with pneumonic symptoms, but that when these symptoms

do not appear, evacuations always do harm. In the cases described by Drs. Millar, Molloy, and Rutty, in which blood-letting was always prejudicial, the pulse was either natural or such as would deter from blood-letting in the croup itself.

By the state of the pulse, then, we are led constantly to employ blood-letting at the commencement of the true croup, but not after it has lasted for some time, and we have reason to believe that what Dr. Home calls the purulent state has commenced; we are led to employ it very rarely in the acute asthma, but sometimes here also, proportioning the extent of the evacuation to the strength of the patient and the hardness of the pulse.

While we are thus guided by the state of the pulse, we ought at the same time to attend to every circumstance tending to establish a diagnosis between the complaints; an attention to which will confirm the judgment we form from the state of the pulse.

After the propriety of blood-letting has been determined upon, the next point to be considered

considered is, to what extent it should be carried. Here we are influenced by a variety of circumstances, which I more than once have had occasion to enumerate, the state of the pulse, habit of body, age of the patient, &c. Dr. Home ordered no less than five ounces to be taken from a child of fifteen months labouring under the croup. The pulse still remaining hard, he ordered a repetition of the blood-letting to the same extent on the same day. On the following day he ordered the child to be bled largely with leeches, and these repeated evacuations were followed by the best effects. We seldom, however, find it necessary to carry blood-letting as far as this. It has been proposed in this, as in similar affections, to let blood from the jugular vein, and when it can readily be opened, it is the best.

With regard to purging in the croup, if we employ it with a view to diminish the inflammatory diathesis, the observations made respecting blood-letting are nearly applicable to it. With this view, however, there is no occasion to employ cathartics; blood-letting answers the purpose much better. We

employ cathartics then only with a view of evacuating the intestines, and for this purpose the gentlest are the best. Dr. Rush particularly recommends calomel in the croup, and thinks it possessed of some specific power independently of the evacuation it occasions. The bark, he says, is hardly a more certain remedy in intermittents, than calomel in the croup, if a large dose be given at the commencement of the complaint and small doses continued throughout its course. I have already had occasion to notice the effects of mercury in allaying inflammatory affections. It is probable that it may be of service in the croup, though not in the degree in which Dr. Rush alleges.

There has been some difference of opinion concerning the propriety of employing emetics in this complaint. Dr. Home objects to them, chiefly however from theoretical reasons; and those who have employed them think themselves warranted to form a very different opinion of them. They are employed in the croup with a double view. At an early period, with the hopes of cutting short the disease; in a more advanced

stage,

stage, with the hopes of expelling the preternatural membrane, which during their operation is often spit up. The reader will find cases in which this happened related by Michaelis.

There is no author, however, who gives so favourable a testimony of the effects of emetics in the croup as Dr. Crawford. In that part of Scotland, called the Carse of Gowrie, he observes, where the croup is very frequent, the constant practice is to give an emetic at the commencement of the complaint, even before the employment of blood-letting or carthartics, and this practice is not only safe but very successful. Few infants die of this disease, he remarks, when a timely emetic has been exhibited.

It is generally judged proper, however, to begin with blood-letting, by which a double advantage is gained. We both take the earliest opportunity of employing the remedy on which we most rely, and lessen the chance of the emetic occasioning too great a determination of blood to the head, which is to be avoided in all inflammations situated

situated in the head or its immediate neighbourhood.

There is also much difference of opinion respecting the use of diaphoretics in the croup; and the advantage derived from them seems more doubtful. Almost all authors however recommend the pediluvium. It is common with nurses, in many parts of Scotland where the disease is frequent, to immerse the whole body in warm water as soon as the complaint shews itself, which sometimes, it is said, wholly removes it. The acetate of ammonia, and a variety of other diaphoretics, recommended by authors, seem to be of little use. Next to the warm bath, nauseating doses of emetics appear to be the most useful diaphoretics in the croup, and these we shall find are useful in another way.

In the complaint described by Dr. Rutty and Dr. Molloy, which appears to be nearly the same as that described by Dr. Millar, diaphoretics were the medicines chiefly relied on. Dr. Molloy observes indeed, that those only recovered in whom he succeeded in bringing out a sweat.

The opinions of authors respecting blood-

letting

letting in the complaints which have been called the croup, are not more different than those respecting antispasmodics. It would appear on comparing a variety of observations, that the more the complaint approaches to the acute asthma, properly so called, the more beneficial they are. In the well formed croup they seem to be quite useless. " Though we suppose," Dr. Cullen observes, " that a spasm affecting the glottis " is often fatal in this disease, I have not " found antispasmodic medicines to be of " any use." Dr. Millar, on the other hand, Dr. Rush and others, in the acute asthma found antispasmodics the most successful medicines. Dr. Millar chiefly employed musk and asafœtida, and after repeated trials he informs us that he was taught chiefly to confide in asafœtida, very large quantities of which he found necessary. " An ounce of this gum," he observes, " has sometimes been taken by a child of " eighteen months in the space of forty-" eight hours, and almost as much at the " same time injected by clysters, allowance

" being

" being made for the residue of the gum " which is lost in making the solution."

Some of the remedies termed expectorants are useful in the croup. I have already had occasion to mention nauseating doses. Opiates after the symptoms are allayed by blood-letting are often serviceable. They allay the cough and render the matter to be expectorated thicker and the expectoration more easy. Gum ammoniac and squills have been recommended, but in the inflammatory stage they are too irritating and afterwards they seem useless.

While the inflammatory symptoms continue, the diet should be very diluent and strictly antiphlogistic. It may be useful when the symptoms run high to abstain from food of every kind for the first twenty-four hours. Nitre is a good addition to the drink.

As this complaint generally leaves the patient much reduced, the bark is often necessary to restore the strength, but in the true croup we must be cautious not to administer it till after every appearance of inflammation has subsided. It is then th

means

means of preventing a relapse; given earlier it might occasion it. The bark may be given more early in the acute asthma. It is particularly serviceable in this complaint during the remissions.*

The observations on the use of digitalis and other means to diminish the force of the circulation, made when we were considering the phlegmasiæ in general, are applicable here.

Such are the remedies acting on the system in general to which we have recourse in the croup and acute asthma; it remains for us to consider the local means used in these complaints, which form a very essential part of their treatment.

The most powerful of the local, as of the general means employed in the croup, is blood-letting. After general blood-letting has been carried as far as the age and habit of the patient will permit, if the symptoms are still considerable, especially if the pulse be hard, it is proper to draw blood from the external fauces. After proper evacuations,

* See the observations of Dr. Millar, Mr. Russel, and others.

there

there are few remedies more beneficial in the croup than blisters. Dr. Home observes, that blisters applied round the neck after the vessels were well emptied, were of great service, but of none, he adds, when applied before this. The chief thing to be observed in their application is, that it should be made as near the part affected as possible.

Blisters do not seem to be so serviceable in the acute asthma as in the true croup. Dr. Molloy tells us that their application was attended with no advantage whatever in the cases he saw. Dr. Millar however thinks a blister applied between the shoulders a means of preventing the recurrence of the paroxysm.

Rubefacients have not been much recommended in the croup. Dr. Miller found them useful applied to the extremities in the acute asthma.

There is perhaps no form of cynanche in which breathing the steams of vinegar and water is so beneficial as in the croup. In whatever manner it acts, whether by mixing with and diluting the thick matter which clogs the bronchial vessels, or as a stimulus acting

acting on these parts and increasing the secretion from them, it is found to loosen the cough, to promote expectoration, and relieve the dyspnœa. Some recommend applying the steams of water externally to the neck. Much however is not to be expected from this. Blistering is certainly more beneficial, and both cannot well be employed.

From the vicinity of the trachea and fauces, many recommend swallowing from time to time some emollient fluid, olive oil or oil of sweet almonds, or what is preferable, because it loads the stomach less, mucilage of gum arabic. I have seen considerable relief obtained by such means. If small doses however do not succeed, we are not to expect much advantage from larger ones, and every thing of this kind tends to load the stomach.

Dr. Thornton, in his Guide to Health, has proposed a remedy, from which, a priori, we should be inclined to expect some advantage, a certain proportion of azotic gas mixed with the air which the patient breathes. This, it is said, has produced very sudden and beneficial effects.

When

When none of the means we have been considering prove successful; when the symptoms, particularly the dyspnœa which is that we chiefly dread, increase; the only chance of relief which remains to the patient is by bronchotomy, by making an opening from the anterior part of the neck into the trachea. This operation is in fact less formidable than it appears, and if carefully performed is generally safe. Dr. Home saw the propriety of it in the worst cases of croup, and was the first who proposed it as a last resource. Michaelis is a bolder practitioner and recommends it in all cases where the symptoms do not yield readily to other means. He gives the arguments for and against it at considerable length, for which I must refer to his Treatise. In avoiding the vulgar prejudices against this operation, Michaelis runs perhaps to the opposite extreme, and considers it more trivial than it really is. One caution given by Dr. Crawford is not to be overlooked, namely, that while we are endeavouring to extract the preternatural membrane, both the artificial passage we have made for the admission

admission of the air, and the passage by the glottis may be so obstructed that the patient may be suffocated before the membrane is got out. In the convulsive asthma this membrane is at least not often formed. Here, therefore, bronchotomy will bring more immediate relief with less danger.

After we have succeeded in removing the symptoms of the croup, some attention is requisite to prevent their return. I have already observed, that, as it often leaves the habit much weakened, the bark is necessary; and after the strength is in some measure restored, the cold bath is often useful; at first, however, it must be used with caution, especially in those of a delicate constitution.

The benefit to be derived from the cold bath in this, as well as other cases, may be judged of by the feelings of the patient after he comes out of it. If a glow of heat succeeds it and the spirits and appetite are improved, it will be found a powerful means of restoring impaired vigour. If, on the contrary, its use is followed by languor, drowsiness, depression of spirits, a

degree of chilliness, and want of appetite, it will rather increase than lessen the debility.

It will also be necessary for some time to pay attention to diet. Whatever occasions acidity and flatulence must be carefully avoided, and the state of the bowels particularly attended to. Most of the complaints of children are more or less influenced by the state of the primæ viæ.

In speaking of the means of preventing a relapse, it is almost unnecessary to observe, that the occasional causes of the complaint above pointed out are to be guarded against with care.*

CHAP.

* Dr. Home is generally supposed in this country to have been the first who distinguished the croup. But it appears from the observations of Michaelis and other foreign writers, that this complaint was known in many parts of the Continent long before his account of it was published. And even in our own country it was accurately described in a paper by Dr. Starr in 1749, published in the Philosophical Transactions for 1750. Dr. Starr's account is in some respects confused; from the cynanche maligna in many of the cases he saw having been complicated with the affection of the larynx. But he has not only given a good account of the

CHAP. X.

Of Pneumonia.

PNEUMONIA is Dr. Cullen's eleventh genus. It is defined by him,

Fever, pain in some part of the chest, dyspnœa cough.*

He divides it into two species, the peripneumonia and pleuritis. The propriety of which division we shall soon have occasion to consider.

the croupy symptoms, but a drawing of the membrane which had lined the whole of the trachea and part of the larger branches of the bronchiæ. Dr. Home, however, may still be regarded as the first person in this country who had any accurate ideas of the complaint, for Dr. Starr made no dissections, and understood its nature so little, that he believed the preternatural membrane which he saw coughed up to be the internal coat of the trachea and its branches; although, indeed, in one part of his paper he observes, that were the trachea laid open, he believes it would be found to be lined with a morbid secretion. Since the time of Dr. Home this complaint has been treated of by a variety of authors, the chief of whom I have had occasion to mention.

* "Pyrexia dolor in quodam thoraces parte, respiratio difficilis, tussis."

SECT. I.

Of the Symptoms of Pneumonia.

THE first sense of uneasiness referred to the thorax in this complaint and the cough are sometimes so slight as to be almost overlooked, or regarded as nothing more than such as in a greater or less degree attend most fevers, so that for some time the patient is believed to labour under nothing more than common fever; he is affected with shivering often alternating with fits of heat, he complains of thirst and anxiety, the breathing is hurried or laborious, the pulse more frequent than natural, and the temperature increased.

Pneumonia generally makes its attack, however, in a less ambiguous way. A severe pain and cough, with much difficulty of breathing, and a strong, hard, and frequent pulse, are often the first symptoms. When the pain, and a degree of dyspnœa arising from it, continue for any length of time without cough and fever, the disease, we shall find, is to be regarded as different from the true pneumonia.

Such

Such, in fact, is an enumeration of all the symptoms of pneumonia, which are much less complicated than those of many of the foregoing diseases. In considering each of these symptoms separately, we shall find them vary considerably in different cases.

The dyspnœa, the most constant symptom of pneumonia, is in some instances not more considerable, it has just been observed, than that which frequently accompanies simple fever; this is true, however, only of the commencement of the disease, for in all cases as it advances the breathing becomes more difficult, it is often short and frequent, the violence of the pain preventing a full inspiration; in other cases, where the pain is either dull or absent, it is oppressed and laborious, accompanied with anxiety and a sense of weight about the præcordia.

The dyspnœa is greatest during inspiration, and generally more so when the patient is in some particular posture. Sometimes it is greatest when he lies on the side affected, sometimes when on the other, and in many cases he can lie on neither, finding

ease only when lying on the back or breast, and very often the erect posture is necessary; when the inflammation is considerable, the breath is sensibly hotter than usual.

The most remarkable symptom of pneumonia is the pain which, in different cases, has its seat in all the different parts of the thorax. But its most frequent seat is about the sixth or seventh rib, near the middle or rather more forwards.

It is a belief among the vulgar that the pain in pneumonia is always in the left side; nor are such errors confined to the vulgar, even many professional men never regard the case as pneumonia unless the pain be in the side. It is, however, very frequently under the sternum, the clavicles, the spine, or the scapulæ. It has been an opinion maintained by the best informed, that instead of the left, pneumonia attacks the right side most frequently. This observation is made both by Van Swieten and Triller,* the latter observing, however, that in the right side it is least dangerous. All such observations seem founded on a partial view

* Triller de Pleuritide.

of

of the subject. It has been observed, says Wendt,* that when the pain in pneumonia occupies the left side, the danger is greater than when it is confined to the right. I have not, however, found this to be the case, and the number of my patients who died of this complaint in the right side is only greater by one than that of those who died of it in the left.

The pain, like the difficulty of breathing, is most felt in particular postures, which are different in different cases. In most cases it is fixed, sometimes it shoots in various directions, sometimes it only shifts its place, and a change of place from the sides to the clavicles or scapulæ has been regarded as a favourable symptom. But Wendt justly observes, that we can make no other inference from it, but that the complaint has changed its seat; I have more frequently, he observes, known a pain of the arms to supervene in pneumonia, and this I have always found salutary.

The kind and degree of the pain is not less various than its seat. Sometimes it is

* Wendt de Pleuritide, in Sandefort's Thesaurus.

exquisitely acute, and during inspiration almost intolerable, only differing in its greater severity from the rheumatic affection called a stitch in the side. At other times it is a more general obtuse pain, and in some cases rather a sense of weight than of pain. Sometimes it is only felt when the patient lies on the right or left side and makes a full inspiration or coughs; this case has been termed the pleuritis occulta, because the pain is only felt by an effort. In some instances, however, it is not felt at all, and the practitioner is left to discover the nature of the disease by an attention to the other symptoms. There is so little alarming in the appearance of such cases, the patient being only affected with more or less cough, considerable difficulty of breathing, which often prevents his lying down, with a greater or less degree of fever, that the assistance of the physician is frequently not called in till it can be of no service.

It is chiefly the different seat, kind, and degree of the pain, which has given rise to the ill-founded division of pneumonia into pleurisy or inflammation of the membranes,

and peripneumony or inflammation of the substance of the lungs, paraphrenitis or inflammation of that part of the pleura which lines the diaphragm, pericarditis or inflammation of the pericardium, inflammation of the mediastinum, &c.

Cough is a very constant attendant on all inflammations of the thoracic viscera, and when the pain is severe it is one of the most troublesome of their symptoms. In some cases it is dry, in others attended with an expectoration; and although dry at the commencement of the disease it rarely continues so during its progress. The absence of the spitting has given rise to a division of pleurisy into dry and humoral, which is as old as the days of Hippocrates.

The appearance and consistence of the matter spit up varies much in different cases. At the commencement of the complaint it is generally thin, becoming thicker during its progress. Much of the prognosis may be gathered from the kind of cough and the matter spit up. Celsus observes, that when there is no expectoration, the prognosis is bad, but worse when the expectoration is bloody;

bloody; the truth of the latter part of this observation experience has since called in question, and although a spitting of much frothy blood is always an alarming symptom,* it is now generally admitted that the matter spit up being tinged with blood, if less favourable than an expectoration without blood, which is doubted, affords a much better progonosis than no expectoration at all. The matter spit up being greenish, of a dark brown colour, or very thin and acrid, so as to excoriate the wind-pipe, or sanious and fetid, is very unfavourable. A copious white or yellowish expectoration of a pretty thick consistence, is the most favourable. It may however be too thick and viscid, as well as too thin. The viscid globular sputa, says Huxham, are bad; and Bianchus observes, in his Historia Hepatica, that we cannot always draw a favourable prognosis from the expectorated matter being copious and thick, but, on the contrary, that a very

* When much blood is poured into the lungs, says Huxham, part often stagnates there and does much harm, producing sanious sputa and sometimes mortification.

viscid expectoration, gradually becoming more so, often portends a fatal termination. It is an observation handed down from Hippocrates, that if there be much rattling in the breast before the matter about to be spit up is expectorated, the prognosis is bad.

Upon the whole it may be observed, that the more copious,* free, and bland the expectoration becomes, and the greater the relief it brings, the better is the prognosis. Every spitting, Wendt observes, which relieves the pain and renders the breathing freer, must be regarded as favourable, let the colour of the matter be what it may, green, livid, or even black. If, on the other hand, the expectoration has been scanty or wholly absent from the beginning of the complaint, and still more if it fails during its progress, if the matter be expectorated with difficulty and little relief is obtained, we dread suppuration or gangrene.

* Schroeder justly observes, that when the expectoration is livid and sanious, the more copious it is, the worse is the prognosis. Schroeder de Pleuritidum partitione, in his Opusc. Med.

There is a peculiar kind of spitting, noticed by many of the writers on this complaint, which is far from favourable, of a thin yellow matter, which has been termed a bilious spitting, and thought by some to characterize what has been called the bilious pneumonia, of which I shall frequently have occasion to speak more particularly.

Suppuration is chiefly to be dreaded when the expectoration is scanty or wholly absent; gangrene when the matter coughed up is livid and sanious.

The spitting has been regarded as a diagnostic between peripneumony and pleuritis, that is, between inflammation of the substance of the lungs and that of their membranes; but we shall find this diagnostic as fallacious as others. Nothing can be more inconsistent than the observations of authors on this head. Dr. Cullen, in his definition of pleuritis, observes, that the cough, although at first dry, becomes moist and sometimes bloody. Wendt, who is very conversant with this disease, remarks that when a patient labouring under pleuritis begins to spit, he no longer regards the

complaint

complaint as a simple pleuritis, but a combination of pleuritis and peripneumony. Sydenham, on the other hand, speaks of expectoration as a constant symptom in the true pleurisy.

Such are the local symptoms of pneumonia and their principal varieties; but no combination of these constitutes pneumonia without the presence of fever. The fever, it is observed above, often shews itself as early as any of the local symptoms, and the latter are never present for any length of time without being attended by the former. If we except the difficulty of breathing and some degree of cough, we shall find no symptom of pneumonia so constant as a frequent pulse.

At the commencement the pulse is generally such as in most of the phlegmasiæ, strong, hard, and frequent. Several authors have observed that the pulse in pneumonia is often different on different sides of the body. Zimmermann gives a case in illustration of this; and Cleghorn says it is often most obscure on the side affected. It was observed of simple fever, that the pulse is sometimes

sometimes oppressed at the beginning, and rises on blood-letting; the same has been frequently remarked of pneumonia. The pulse, says Huxham, at the very beginning is sometimes obscure, oppressed, irregular, and intermitting, accompanied with great prostration of strength. If these symptoms, he remarks, appear in a person of a good habit and unimpaired vigour, they often proceed from the vessels being overloaded; and the pulse and strength rise on blood-letting. But there is a species of pneumonia which comes on with a depressed pulse that sinks on blood-letting, which I shall soon have occasion to notice more particularly.

Soon after the commencement of the disease the face becomes flushed, the skin hot and dry, the urine sometimes quite limpid and in large quantity, which has ever since the days of Hippocrates been regarded as an unfavourable symptom; at other times scanty and high coloured.

The bowels are seldom regular, but either costive or too much relaxed. The thirst is considerable, and the tongue generally dry, white,

white, and rough. In short all the symptoms of synocha are superadded to the foregoing.

Idiopathic pneumonia agrees with the other phlegmasiæ in not being often attended with delirium or coma, if, according to Boerhaave, we except those cases which are terminating by suppuration. Even in these indeed they are far from being frequent symptoms. When pneumonia is attended with delirium, we generally find that the former is not the primary disease.

Such are the symptoms attending the commencement and progress of pneumonia. It remains for us to consider its different terminations, and the symptoms which indicate its tendency to them, by an attention to which the prognosis at the various periods of the disease is ascertained.

Resolution is the only termination of pneumonia which deserves the name of favourable, for few recover after suppuration has taken place. Resolution is generally attended with some sensible evacuation. It has already been remarked that nothing is more salutary than a copious and free

expectoration

expectoration whether streaked or not with blood.

It is certainly in some measure a contradiction in terms to say that the termination is by resolution when the matter expectorated is evidently purulent. It has long been taken for granted that the formation of pus is always attended with the destruction of the soft parts, so that suppuration implies not only the formation of pus, but also the cavity or ulceration which it frequently occasions. But now that we are well assured that the formation of pus may take place without either abscess or ulceration, it is necessary to have some term expressive of its formation without these accidents. If the term suppuration is used in this sense, the termination I am speaking of certainly often deserves the name.

It has puzzled many Physioligists to account for the formation of pus in such cases, for it has even been found after death in the bronchiæ, where it was impossible to trace any marks of ulceration. De Haen supposed the pus in these instances to be formed in the blood, and poured out by the

the exhalents. Dr. Cullen accounts for its presence by some conclusions of Sir John Pringle, which, we have seen, are far from being accurate.* The experiments of Mr. Home, demonstrating how readily pus is formed by inflamed secreting surfaces, throw more light on its formation in the present case.

If we except a copious expectoration, there is no evacuation which more frequently attends a favourable termination of pneumonia than a flow of sweat; any degree of general moisture appearing on the skin in pneumonia is favourable; a sweat seldom fails to bring relief, and if it be universal and copious often carries off the disease. But Wendt observes, that if the symptoms do not soon remit, the sweat often proves fruitless or even hurtful. Much sweating, says Quarin, which does not relieve the symptoms, is dangerous. And Huxham remarks, that the fluid which the patient drinks, running off quickly by any of the excretories, even by profuse sweating, has

* Introduction to the 2d Part, vol. iii.

ever since the days of Hippocrates been regarded as unfavourable.

An hemorrhagy from the nose often brings relief. Hoffman considers it most salutary when it occurs about the fourth day, but it proves beneficial much earlier; and later than this period it seldom, however, produces a perfect crisis. The appearance of the hemorrhois also, though less frequently, promotes the resolution of pneumonia. Many reckon blood in the sputa favourable, so that moderate hæmoptysis may perhaps be ranked among the critical hemorrhagies in this complaint.

The appearance of the miliary eruption is favourable when not forced out by the heating regimen, particularly, Allionius* observes, when the complaint has arisen from cold.

High coloured turbid urine, depositing a copious sediment, frequently, but not always as some alledge, accompanies the resolution of pneumonia.

Although diarrhœa sometimes brings relief, particularly, says Schroeder, at an

* De Febre Miliare.

advanced

advanced period, it less frequently does so than any other evacuation which has been mentioned, and is upon the whole, particularly at an early period, to be regarded as unfavourable, except there be bile or other irritating matter in the bowels.* Whatever oppresses the bowels is particularly hurtful in pneumonia. Symptoms of indigestion, especially much flatulence, are unfavourable. In such cases, Schroeder observes, a spontaneous vomiting is often critical.

The discharge occasioned by catarrh is also unfavourable. This case is termed by Huxham the catarrhal pneumonia, and he regards the prognosis in it as very bad.

I have already had occasion to observe, that the phlegmasiæ are sometimes terminated by what is called metastasis, that is, by the inflammation changing its seat. Thus pneumonia is sometimes terminated by an inflammation and suppuration of the parotid glands, or by the appearance of an erysipelatous inflammation on the surface. Inflamed swellings, says Quarin, sometimes

* Quarin de Feb.

appear behind the ears, or on the legs, or other parts, and prove critical in pneumonia. Huxham and others make similar observations.

But it is evident that every metastasis is not favourable, the inflammation may seize on a part equally or more vital than that it first occupied; this, however, rarely happens in pneumonia. The liver and spleen are the viscera most frequently attacked in metastasis of pneumonia.

A short time before any of the favourable terminations just mentioned, a general remission of the symptoms can, for the most part, be perceived.

The unfavourable terminations of pneumonia are, the formation of an abscess or suppuration, with ulceration and gangrene, which it has in common with the other phlegmasiæ, and certain terminations peculiar to itself.

We have reason to suppose that suppuration will take place, if the symptoms continue severe without being very violent, if those of resolution do not shew themselves within four or five days, if there be either

either no spitting or such as brings no relief, if the symptoms have not yielded to blood-letting and proper medicines, but without being violent continue obstinate, especially if delirium with rather a soft undulating pulse supervene.

That suppuration has actually begun we know from frequent slight irregular shiverings following the symptoms just enumerated without any manifest cause; from the pain being mitigated or removed while the dyspnœa continues; from the pulse becoming fuller, softer, and either slower or more frequent; from the cheeks and lips looking red; and from an increase of thirst and fever in the evening.

We have reason to believe that a collection of matter, which in the lungs is termed a vomica, is formed, when after the above symptoms there is an obstinate dry cough, the respiration being difficult, short, laborious, rattling, and more frequent than usual; when the patient is able to lie only on the side affected; when there is slight fever returning at intervals, particularly in the evenings, with redness of the

cheeks and lips, the dyspnœa cough and fever being increased by eating and exercise; when the thirst is considerable and there are sweats towards morning, especially about the throat and forehead, with turbid urine, a palid countenance, wasting of the body, and great debility. The peculiar fever which supervenes in such cases, and which is characterized by these symptoms, appears to be constantly symptomatic, and generally, if not always, indicates an absorption of purulent matter.

When the abscess is situated in the most external part of the lungs immediately under the ribs, we may often perceive a soft swelling appearing between the ribs, and a fluctuation of the matter can sometimes be distinctly felt. But many of the foregoing symptoms are not essentially connected with the presence of a vomica. The rattling breathing often arises from part of the matter that should be expectorated adhering to the branches of the bronchiæ, the patient's strength being too much reduced to bring it up; nor does it always happen that he can only lie on the side affected, he can frequently

lie

lie on both without any inconvenience; and it is observed by many, that the shiverings which generally precede the formation of a vomica are often hardly to be perceived or wholly wanting; and as for the disease, Wendt observes, being long protracted and some of the symptoms abating, this must be regarded as one of the least certain signs of suppuration having taken place.

Upon the whole, however, the ceasing of the pain, or the pain being changed into a sense of weight, without any of the evacuations, which it was observed above frequently attend resolution,* while the cough, dyspnœa, and fever still continue, the pulse loosing entirely its hardness, and the fever assuming the form of hectic, leave no room to doubt the presence of an abscess in the lungs. About the seventh day, not the fourth as some have alleged, is the period at which, if the complaint has continued without any remarkable remission, we may suspect that suppuration is taking place; even in such cases indeed

* Dr. Millar's Treatise on the Diseases of Great Britain.

resolution has taken place as late as the eleventh or twelfth day; but this is rare with regard to the cases in which there are remissions, these may terminate by resolution after a much longer time. Dr. Cullen remarks, that resolution seldom happens in any case after the fourteenth day; I have known it happen, however, after the complaint had lasted four or five weeks.

Except a vomica be situated on the surface of the lungs so that the fluctuation may be felt externally, in which case the matter may be discharged by an opening made through the intercostal muscles, it generally proves fatal. There are four ways in which a vomica may prove fatal. Without bursting it often occasions hectic fever, which gradually exhausts the strength. Abscesses of the lungs, however, when their sides have become so callous as to prevent absorption, have remained for many years, without producing fever or otherwise impairing health. When the abscess is large and bursts into the substance of the lungs, it often produces instant suffocation. When the matter is discharged into

into the cavity of the thorax, there is found what has been termed an empyema; the matter falls down upon the diaphragm when the patient is in the erect posture, occasioning a sense of weight in the lower part of the chest. The difficulty of breathing, (which is now greatly increased if the patient lies down, especially on the back) cough, and hectic fever continue, and gradually exhaust the strength. In the empyema the fluctuation of the matter may often be perceived in the cavity of the thorax.

A vomica may terminate fatally in a fourth way; when it is small its bursting does not occasion suffocation, but an expectoration of pus; an ulcer of the lungs is generally the consequence, and phthisis succeeds, the symptoms of which we shall soon have occasion to consider. It has sometimes happened, however, in very healthy habits, especially in such as are free from any scrophulous tendency, that the ulcer formed by the bursting of a small abscess in the lungs has healed, and the patient has got well.

An abscess of the lungs sometimes, though

though rarely, terminates favourably in another way; cases are alluded to by Quarin and others, in which the pus was absorbed and passed by urine or stool, and sometimes we have reason to believe it has been deposited in other parts of the body; but these are occurrences so rare, that in forming the prognosis they are hardly to be taken into the account. Wendt observes, that when pneumonia terminates by suppuration, the abscess generally bursts before the twentieth day of the disease. Its bursting, however, is often delayed to a much later period.

The termination of pneumonia in gangrene, which is very rare, always proves fatal in a very short time. The tendency to gangrene is known from the general violence of the symptoms, and from their wholly resisting the usual remedies. When gangrene is about to take place there is a diminution of the pain, the cheeks become red, the pulse sinks, and the matter expectorated assumes an ichorous appearance. When the gangrene has actually taken place the pain ceases without any of the

salutary

salutary evacuations above-mentioned, the countenance becomes pale, the pulse still more feeble and intermitting, cold clammy sweats appear on different parts of the body, hiccup, loss of sight, and general stupor supervene, and the patient soon expires. Dr. Cullen, however, justly observes, that the termination by gangrene is so conjoined with that by effusion, which I shall presently have occasion to consider, that their symptoms are hardly to be distinguished.

It is supposed by many that pneumonia may terminate in schirrus, which is known, according to Quarin, by great difficulty of breathing and a troublesome dry cough remaining after the other symptoms are gone, and much increased by exercise or a full meal; it is distinguished from a vomica by the absence of hectic fever, and the symptoms remaining in the same state for a great length of time, while in the vomica they generally grow worse.

In some cases, however, there seems to remain after pneumonia a difficulty of breathing and oppression, indicating no fixed

fixed complaint in the lungs, but mere debility; this is most apt to happen in nervous irritable habits, and is best known by the absence of hectic fever.

The terminations peculiar to pneumonia are, an effusion of red blood or of a serous matter into the substance of the lungs, producing suffocation, or such an exudation from the pleura as occasions a true hydrothorax. When the effusion from the surface of the pleura is small, it forms the cement of those adhesions to the pleura, costalis and mediastinum, so constantly observed in those who have suffered even in the least degree from pneumonic inflammation, and indeed those adhesions arise from such slight causes, that few are wholly free from them. There is also frequently an exudation into the bronchiæ of a thickish serous fluid, which often accumulates in such quantity that it cannot be brought up, and occasions suffocation.

When any of the fatal terminations of pneumonia are about to take place, we can generally observe an evident increase of the whole, or part of the symptoms, the pain

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is often felt more generally throughout the thorax, the difficulty of breathing is increased, the patient becomes more watchful, or (which is much more rare) is affected with a degree of coma that rarely however becomes considerable. In some cases there is a degree of delirium. The matter expectorated is more mixed with blood or the expectoration ceases, either owing to the bronchiæ being clogged by the quantity of viscid fluid poured into them, or the increasing debility of the patient.

Upon the whole, the less difficult the breathing, the less severe the cough, the more copious and free the expectoration and the greater the relief it brings, the more regular and firm, and the less frequent and hard the pulse, and the less the strength is reduced, the better is the prognosis.

Pneumonia generally proves fatal before the seventh day, sometimes as early as the third; but where death is occasioned by the bursting of a vomica it is commonly much later. Vomicæ, it is observed above, generally burst before the twentieth day, but if they are succeeded by an empyema or phthisis

phthisis death may be delayed to a much later period.

There are few complaints whose diagnosis is easier than that of pneumonia, the only difficulty is to distinguish it from cases of symptomatic and false pleurisy. Yet there is no symptom in pneumonia which is not met with in other diseases. Few symptoms are more frequent than pain in some part of the chest, cough, more or less difficulty of breathing, and fever; but where these, or the three last of these, are combined, we are well assured of the presence of pneumonia. The diagnosis of this disease is easy because the symptoms which mark it are few and distinct.

Although we succeed in removing the symptoms of pneumonia, we have not removed the danger, for this disease is very frequently renewed, and the second attack is often more violent and almost always more dangerous than the first. Wendt even speaks of a recovery from such cases as rare, "non semper sunt lethales;" and Quarin remarks, "Pleuritis recidiva vix "curanda."

SECT. II.

Of the Appearances on Dissection.

ON laying open the thorax, we often find in the substance of one or more of the lobes of the lungs a collection of a greenish yellow pus, sometimes mixed with blood of a brown or dark red colour, and of a grumous appearance.* The same kind of matter is often found on the surface of the lungs or between the folds of the pleura, portions of the lungs and pleura are soft, and sometimes wholly dissolved in the purulent or sanious matter just mentioned. There are cases on record in which portions of the pleura were dissolved, the lungs being left entire; such cases are very rare, and Schroeder and others remark, that it is rare for the pleura to be affected with much inflammation without the lungs partaking of it.

* Wendt mentions a sack of black blood found in the substance of the lungs after pneumonia, which was probably formed by extravasation during the disease.

When

When the inflamed pleura remains entire it is often covered with florid spots.

On examining the lungs more particularly we often find small lurking ulcers in the parenchyma and the branches of the bronchiæ; sometimes the lungs are indurated in different parts; and Cleghorn observes, that they are sometimes changed into a hard substance like liver, which sinks in water.

The bronchiæ frequently contain the same kind of matter which we meet with in the substance of the lungs and between the folds of the pleura.

The liquor of the pericardium is generally altered either in quantity or quality. Sometimes it is much more copious than usual, sometimes wholly wanting, and the pericardium itself (which like the pleura is now and then soft and partly dissolved) adheres to the heart throughout its whole extent. It seems to be this consequence of disease which has given rise to the opinion of the pericardium being sometimes wanting. The liquor of the pericardium is often tinged with blood, and in some cases

wholly

wholly consists of a greenish purulent matter.

The heart itself, though not often, sometimes partakes of the morbid appearances. On cutting through its sides a small quantity of pus is found scattered here and there among its muscular fibres.

Polypous concretions are found in the heart and large blood vessels; these, I have already had occasion to remark, seem to be formed in articulo mortis or immediately after death, and seem to be little connected with the disease of which the patient dies. The principal blood-vessels of the chest are sometimes enlarged, and the blood in them, as well indeed as in every other part of the lungs, is generally of a very dark colour.

The lungs often appear considerably enlarged, apparently from their containing a greater than usual quantity of extravasated fluids. They are often covered with a soft whitish viscid crust, which frequently assumes a membranous form, and seems, as I have just had occasion to observe, to be the cement where adhesions between the folds of the pleura take place. There is no con-

 sequence

sequence of pneumonic inflammation so common as these adhesions, they must either be occasioned by inflammation so slight that it is not attended with the usual symptoms of pneumonia, or they must arise also from some other cause, for they are found in many who never laboured under this complaint. Dr. Monro, in his Anatomical Lectures, observes, that he has examined the thorax of few adults without finding more or less of such adhesions. Some imagine that the adhesions left by pneumonia are a principal cause of the frequent recurrence of this complaint; except when very extensive however, in which case they frequently occasion habitual dyspnœa, they do not seem to have much tendency of this kind. The frequent recurrence of pneumonia in those who have once laboured under it, is readily accounted for by the tendency to future attacks which all inflammations leave behind them, and the exposed situation of the lungs.

It is very common to meet with morbid appearances in the abdomen of those who die of pneumonia. The liver and pancreas

are

are often found indurated, and the former enlarged. There is sometimes also induration of the spleen, and very frequently worms are found in the upper parts of the intestines, particularly in the jejunum. In a very large proportion of the cases mentioned by Wendt, limbrici were found in this intestine. The reader will also see similar cases in the 21st Epistle of Morgagni de Sedibus et Causis Morborum.

The only morbid appearance usually found in the head is that of congestion, which the reader will find particularly noticed by Dr. Cleghorn and others.

SECT. III.

Of the Varieties of Pneumonia.

I HAVE already hinted that it is only lately that pneumonia has been regarded as one complaint. By the older writers, and by many even in our own days, particularly foreigners, it has been divided into a number of different diseases, according to the place which the inflammation occupies. When

it is seated in the substance of the lungs, the disease is termed peripneumonia; when in pleura, pleuritis; in the diaphragm, paraphrenitis; in the heart, carditis; and even inflammations of the mediastinum and pericardium are regarded as distinct complaints. Certain combinations of these affections also have peculiar appellations; that of the inflammation of the substance of the lungs, for example, and their investing membranes, have been termed pleuroperipneumonia or peripneumopleuritis.

There is so strong and in some places so general a prepossession in favour of the foregoing divisions of pneumonia, that it will be necessary for me to consider at some length on what observations they are founded, and how far they can prove useful in practice.

The great division of pneumonia which falls first to be considered, is that into peripneumony and pleurisy.

Dr. Cullen, apparently more in compliance with the opinions of others than relying on his own judgment, has given this division a place in his Nosology. The former he defines

defines, pneumonia, with a pulse not always hard, sometimes soft, the pain dull, the respiration constantly difficult, and often only to be performed in the erect posture, the face swelled and purple, the cough generally moist, and the matter expectorated sometimes bloody. Other authors give a similar, though in some respects a different account of peripneumony. In the peripneumony, Hoffman observes, the inflammation is seated more deeply in the substance of the lungs, the pain is more dull and extends to the back and scapulæ, the breathing more laborious, and the pulse soft. The pulse, Dr. M'Bride observes, is less hard than in the pleurisy. Burserius gives a fuller account of the diagnostic symptoms of peripneumony than any other writer I have met with. It is attended, he observes, with such difficulty of breathing, that the patient is in danger of suffocation, which often obliges him to sit as much as possible in the erect posture, the breathing is frequent, the breath very hot, the cough at first dry with a very scanty expectoration, which is frothy, thin, crude, yellow, or mixed with blood;

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at a more advanced period becoming more considerable, thicker, better concocted, and more easily spit up. The patient complains of a weight, oppression, and distension throughout the whole chest, but there is no pain except such as can hardly be felt, confined chiefly to the region of the sternum and spine, and often only perceived when the breast is powerfully agitated by coughing. The cheeks are red and swelled, the eyes prominent, the head pained, the tongue parched, at first yellowish, afterwards covered with viscid mucus, at length black and chopped. These symptoms are accompanied with a great desire for cold drink and fresh air, a full and sometimes undulating soft pulse. Sometimes however, he observes, contrary to the assertions of most authors, the pulse is strong and hard ;* at other times it is irregular and intermitting or very small and quick. The patient lies with more ease on the back than on the

* Haller mentions a case in which the strong hard pulse was very remarkable, yet it appeared on dissection that the lungs alone had been inflamed. Opusc. Pathol.

sides.

sides. The debility is very great. The urine is sometimes pale and clear, at other times dark coloured and turbid. Many other accounts of peripneumony nearly in the same tenor might be adduced.

There are but two purposes which can possibly be served by thus separating from the other symptoms of pneumonia and calling by a particular appellation those just enumerated. It must either teach us to ascertain the seat of the disease with more accuracy, or enable us better to suit the modes of practice to the various symptoms of pneumonia. Let us consider how far it can answer either of those purposes.

In the first place, it may be remarked of the different accounts of peripneumony which have been quoted, that their authors are far from agreeing among themselves what its diagnostic symptoms are, and this is a point which must remain to be settled, although it be found that some of the foregoing symptoms always indicate an inflammation of the parenchyma of the lungs, and demand a treatment different from that necessary in other cases of pneumonia.

However different the characters of peripneumony just quoted and others which might be quoted, they seem all to agree in this, that an obtuse and pretty general pain, or the total want of pain with a great degree of dyspnœa, are its chief characteristic marks, and on comparing these accounts together we shall find, that there is no other symptom generally regarded as characteristic of peripneumony.

A similar observation may be made respecting pleurisy. Were we to examine the different accounts of authors, we should find but very few symptoms which all agree in regarding as peculiar to this form of the complaint. Dr. Cullen says the cough is moist at certain periods of pleurisy. Wendt says it is always dry. The hard pulse and quick short breathing, supposed by Hoffman to characterise pleurisy, are mentioned by others as symptoms of peripneumony.

Upon the whole, if we compare together the various accounts of pleurisy given by the writers who adopt this division of pneumonia, we shall find, that the acute pain is almost

almost the only symptom regarded by all of them as characteristic of this form of it.

It is first to be considered then, whether the dyspnœa being very considerable and the pain either dull or absent, indicate that the inflammation is confined to the parenchyma, and the dyspnœa being less urgent but the pain more acute, that it has its seat in the membranes of the lungs? If the reader will consult the 20th Epistle of Morgagni de Sedibus et Causis Morborum, particularly the 9th, 33d, 35th, 39th, 41st, 43d, 47th, 49th, and 62d sections of it, and some parts of his 21st Epistle, he will find, that the symptoms regarded as peculiar to pleurisy have frequently attended the parenchymatous inflammation of the lungs; he will find that the acute pain supposed to characterise the inflammation of the pleura, has often been present when it appeared on dissection that there had been no inflammation of any part of this membrane.

When we inspect the bodies of those who died of inflammation of the lungs, (says Schroeder*) they alone have been found

* Opusc. Med.

inflamed,

inflamed, although all the symptoms of pleurisy had been well marked. Petrus Scervius opened three hundred people, at Rome, who died with the symptoms of pleurisy, in all of them the lungs were greatly inflamed, the pleura little or not at all. Tissot met with similar cases, and Diemerbroeck says, that in two or three cases in which there had been no acute pain, and where consequently, according to the common opinion, the parenchyma of the lungs alone should have been affected, the pleura equally partook of the disease. Even Burserius observes, that dissections are not wanting to prove that inflammation of the pleura has been present without any pain at all. Sydenham seems to go so far as to believe the parenchyma of the lungs to be very frequently the seat of pleurisy. And Juncker observes, in his Conspectus Pathologiæ, that pleurisy often passes into peripneumony, by which we may understand, that the parenchyma was found inflamed where the symptoms had been those of pleurisy; for such is the prejudice in favour of this division of pneumonia, that when it

was

was found that the appearances on dissection were not as were expected, it was supposed that the one form of the complaint had passed into the other; an opinion, however improbable, which seems to have been sanctioned even by Haller. Yet we find some of the oldest writers expressing their doubts of the inferences drawn from the symptoms of pneumonia, respecting the precise seat of the inflammation. Hippocrates speaks of pleurisy and peripneumony as affections much akin, if he does not go farther; and Galen observes, that the pain in peripneumony is sometimes acute. I need hardly add that the conclusion from all these observations, and many more might be added from authors of equal authority, is, that we cannot, from any of the symptoms of pneumonia, positively determine whether the seat of the inflammation is in the parenchyma of the lungs or the pleura.

The remaining question is, whether the foregoing division of pneumonia assists us in the treatment of the complaint. When we come to consider the practice in pneumonia, this question will be readily answered.

We

We shall find that whether the symptoms be those of peripneumony or pleurisy, the mode of treatment is the same; nor does the prognosis vary, the symptoms characterising these varieties not being those from which it is collected. Of what use then is the division in question? Are we not warranted to adopt the sentiments of those who have wholly rejected it?

It is proper to observe here, that there are two other complaints, which have been termed peripneumony and pleurisy, frequently confounded with pneumonia, which differs essentially from it as well as from each other, both in their symptoms and their modes of treatment, namely, the bastard pleurisy, and the peripneumonia notha; on the former of these I shall presently have occasion to make some observations; the latter must be considered more at length.

We shall find similar reasons for rejecting the other varieties of pneumonia. An inflammation of the diaphragm and that part of the pleura which lines it has been termed paraphrenitis, and is said to be attended with symptoms which distinguish it from inflammation

inflammation of other parts of the thoracic viscera. "Paraphrenitis," says Huxham, "is attended with a very acute fever and a "violent pain extending from the lower "ribs to the lowest vertebræ of the back, "a short convulsive singultuous kind of "breathing, a vast anxiety and uneasiness, "dry cough, hiccup, and delirium; an ex-"cessive pain is particularly felt on every "inspiration, which darts itself from the pit "of the stomach to the very loins, and the "hypochondrium of the side affected is "drawn inwards and upwards under the "ribs, while the abdomen is scarce per-"ceptibly moved in respiration, but remains "fixed and convulsed as it were by the "violence of the pain in attempting an in-"spiration."

Huxham, however, overlooks the symptom which has been most celebrated as a diagnostic of paraphrenitis, a convulsive laughing, the risus sardonicus, as it is called from the name of an herb which was supposed to possess the power of exciting it.

But although delirium, the risus sardonicus, and others of the foregoing symptoms, have

have been observed where dissection discovered the diaphragm and its membrane to be the seat of the inflammation, it has more frequently happened that traces of inflammation have been found in them where it had not been indicated by these symptoms. Cleghorn confesses that, in a case which he had mistaken for common pleurisy, he found on dissection traces of inflammation neither in the lungs nor pleura, but in the diaphragm. Morgagni relates two cases in which the diaphragm was wounded without producing the risus sardonicus. This symptom has often been observed in intermitting fever and in the common typhus without inflammation of the diaphragm. Strack mentions many cases of the latter; and Quarin gives one in which venesection was performed on the supposition of the diaphragm being inflamed, and proved fatal.

The symptoms which are said to characterise an inflammation of the mediastinum are, the pain being acute and felt under the sternum or between the shoulders, and shooting through the thorax from the one place to the other, accompanied with a

cough

cough which produces but a small and difficult expectoration. When the pericardium is inflamed, the pain, it is said, is deep seated, the oppression and anxiety are excessive, attended with palpitation of the heart and a constant inclination to cough. The same may be said of these cases as of the paraphrenitis; there is no doubt of dissections having shown traces of inflammation in the mediastinum and pericardium where the foregoing symptoms had been present, but there is as little doubt of these symptoms having been present when no traces of inflammation could be found in either, and of traces of inflammation having been found in both were none of these symptoms had appeared. "Certe "novimus pericardium sæpe inflammatum "fuisse, sine aliis præter peripneumoniæ "signis."*

One would, a priori, be led to believe that the symptoms accompanying an inflammation of the heart must differ essentially from those attending inflammation of any other of the thorascic viscera. This how-

* Culleni Synopsis Nosol. Method.

ever

ever is far from being the case. Dr. Cullen, indeed, in his system of nosology, makes carditis a distinct genus from pneumonia, but observes, at the same time in a note, that he agrees with Vogelius in believing that the symptoms of carditis are almost the same with those of peripneumony, but in general more severe. Linnæus, he observes, must also have been of the same opinion, since neither carditis nor pericarditis are arranged as distinct complaints in his system of Nosology.

Dr. Cullen defines carditis, a fever with a pain in the region of the heart, anxiety, dyspnœa, cough, an irregular pulse, palpitation, and syncope. From this definition would the following case from Wendt be regarded as one of carditis. A man of thirty-six years of age, he observes, complained of a pain in the left side, with a violent and painful cough, and was obliged on account of the dyspnœa to remain in the erect posture; the cough was moist and much yellow matter was expectorated without relieving the symptoms. Guided by the foregoing definition, should we assert that

that in the foregoing case the heart was inflamed. On dissection it was found that both the heart and pericardium were inflamed, and pus was found among the muscular fibres of the former. Many similar cases might be adduced to shew the insufficiency of any diagnostic symptoms of carditis. If an irregular pulse attends the symptoms of pneumonia, and actual syncope occurs, it is more than probable that the heart is inflamed, but these symptoms are far from being constant attendants on carditis, and the former very frequently attends other cases of pneumonia.

There is still another affection which the reader will find regarded by writers as distinct from other forms of pneumonia. It appeared unnecessary to speak of it at length, as there is hardly a shadow of reason for regarding it as a distinct disease. I allude to the affection termed by authors the pleuritis vera, by which is understood an inflammation of the pleura costalis, which does not spread to the pleura of the lungs or any other neighbouring part. That such a case has existed is certain, but

 dissection

dissection is the only means by which its presence can be ascertained.

I have not mentioned the erysipelas of the lungs as a division of pneumonia. This term is now little used, and seems never to have had distinct ideas annexed to it. In different authors the reader will find different accounts of what is meant by it; and as for rheumatism of the lungs, a term used by some writers, it is employed very inaccurately to express some one or other of the foregoing affections.

Such are the symptoms of pneumonia, and the facts which have induced many of the best writers to regard as one complaint the inflammation of all the thoracic viscera.

Pneumonia is either simple and idiopathic, idiopathic and complicated with other diseases, or symptomatic. Pneumonia complicated with typhus is termed peripneumonia putrida, or maligna with synocha, the peripneumonia ardens, or synochus pleuriticus. Pneumonia complicated with catarrh is called by authors the pleuritis catarrhalis or lymphatica.*

* For other combinations of this kind see Dr. Cullen's Synop. Nos. Method.

It

It will be necessary to consider some of the symptomatic pneumoniæ at greater length, otherwise the symptoms of the idiopathic and symptomatic may be confounded, and thus much confusion introduced into the treatment as well as the history of the disease. The reader will find many different species of symptomatic pneumonia mentioned in the 102d, 105th, and 106th pages of Dr. Cullen's Nosology, and many more in Burserius's Institut. Med. Pract. But those which chiefly demand attention are the pleuritis or pleurodyne verminosa, or stomachalis, as Bianchus calls it, and the pleuritis biliosa, which Dr. Cullen seems to have overlooked. It will also be necessary to make a few remarks on bastard pleurisy; and I shall make such observations on the treatment of these forms of the complaint as shall prevent the necessity of again making mention of them, which will occasion no embarassment to the reader if he is acquainted with what has been said of the treatment of the phlegmasiæ in general.

Any thing which greatly deranges the

stomach and intestines, often occasions a pain in some part of the side, accompanied with more or less dyspnœa; and careless observers may mistake such cases for cases of pneumonia. On examining the pulse, however, the difference is very apparent. In the former the pulse is natural or nearly so; besides, in these cases there is not necessarily any cough.

But it appears from many observations that a certain degree of irritation of the stomach and bowels is capable of producing true pneumonia. How, for example, shall we otherwise account for the frequent combination of this complaint and worms in the intestines?

In the 43d, 44th, and 45th sections of Morgagni's 21st Epistle, the reader will find the pleuritis verminosa treated of at some length. He mentions one case, in which all the symptoms of pleurisy were well marked, terminated by a bloody vomiting which brought up a lumbricus. We might in this instance attribute the relief obtained rather to the loss of blood than the expulsion of the worm; but he refers to a paper of

of Pedratto on the pleuritis verminosa, where the relief obtained by the expulsion of worms from the stomach and intestines, particularly from the former, is proved beyond reply.

It appears, from what is said in this paper, that all who vomited worms or passed them by stool recovered, while those who did not died. All the common modes of treatment in pneumonia failed, anthelmintices alone were successful. The cases related by Pedratto are the more remarkable, but they did not appear in solitary instances, but as an epidemic attacking the inhabitants of a whole town and neighbourhood.

While the expulsion of worms from the primæ viæ instantly relieves the symptoms, it is impossible for us to believe that there is any inflammation in the thoracic viscera. Fever frequently attends worms, and it does not seem difficult to explain how they may occasion pain in the side and dyspnœa. If it be asked, says De Haen,* in what manner worms occasion the symptoms of pleurisy without the actual presence of

* Method, Medendi.

inflammation in any of the thoracic viscera, it is not difficult to answer the question. Some parts of the intestines, he observes, rise as high as the 9th, 8th, 7th, and even the 6th rib. Now if lumbrici adhere to these parts, biting and tearing the intestine, must they not occasion a pain resembling that of pleurisy? Will not the wounded intestine be pained more acutely when it is pressed by the diaphragm in a full inspiration, and if the respiration be thus hurt can we suppose that there will not be some degree of cough? This explanation is very intelligible. There is one circumstance, however, overlooked by De Haen, which tends to involve the nature of the pleuritis verminosa in much obscurity. In those who die of this complaint the same traces of inflammation are found in the thoracic viscera as in those who die of other forms of pneumonia.

Pedratto found on examining the thorax of one of his patients the whole lungs swelled on the left side, which had been the seat of the pain; they were inflamed and of a dark colour, and in the interior

part

part there was a collection of white ichorous matter. The pleura was every where inflamed, livid, and marked with red points. The intercostal muscles partook of the inflammation. Thus it appears that the false pleurisy, arising from the affection of the primæ viæ, for we have no reason to believe that there is any thoracic inflammation at the commencement of such cases, is in the progress of the disease changed into the true pleurisy, but why it is so it is impossible to say. Morgagni's explanation of this fact seems inadmissible.

If the presence of worms in the intestines is capable of exciting pneumonia, it is not surprising that they aggravate its symptoms, and therefore that all who labour under this disease die if the offending cause is not removed. The bilious pleurisy seems only to differ from the pleuritis verminosa in the difference of the irritating cause. The presence of bile in the intestines produces in this case nearly the same effects which the presence of worms do in the former. It has been observed, that the pains in the bilious pleurisy are wandering, the cough

dry and troublesome, with little and difficult expectoration, the pulse quick and frequent, the watching constant, the anxiety great. In this case, Burserius observes, blood-letting hurries on the fatal termination, which often happens on the fifth day when this remedy has been employed, but is generally delayed to the 7th, 9th, or 11th where it has been avoided. The less useful blood-letting is in pneumonia, Schroeder observes, the more reason there is to suspect an accumulation of bile in the stomach and intestines. The accounts which we have of the bilious pneumonia are less distinct than those of the pleuritis verminosa. This arises from complaints of different kinds having gone by the name of bilious pleurisy, for some authors have termed every case of pleurisy bilious in which the spitting was thin and yellow. The bilious pleurisy is best characterised by the various symptoms indicating the presence of bile in the primæ viæ; the patient having on former occasions been subject to bilious complaints, and the causes of such complaints having been applied, assist the diagnosis.

The

The chief symptoms denoting the presence of bile in the stomach and intestines are a sense of oppression, nausea, and a bitter taste in the mouth, with giddiness and pain in the head, and an unusual fetor of the fæces. These symptoms, Schroeder observes, sometimes do not appear till after one or two blood-lettings. In many cases of bilious pleurisy, he observes, blood-letting is inadmissible. Emetics and cooling cathartics must be had recourse to, and when they succeed in removing the cause of irritation from the primæ viæ, the pneumonia often ceases, and even nature, he adds, frequently relieves this disorder by spontaneous vomiting and purging. "In "this month of February," it is observed in the 5th volume of the Edinburgh Medical Essays, where the reader will find a good account of this species of pneumonia, "a "pleurisy which had something uncommon "in it was very frequent in Fife, and at first "proved fatal to many. It began with "shivering, head-ache, trembling, and bi-"lious vomiting, which after two days were "succeeded by a pungent pain among the

"short

" short ribs, difficult breathing, and a short " cough. The thirst of the sick was mode- " rate if they were not blooded, but when " as much blood was taken as the degree of " pain seemed to require, the thirst in- " creased, as likewise the sickness of the " stomach, till they fainted. The pulse " quickly sunk on drawing blood, which " was brownish, yellowish, or greenish, and " hardly coagulated. The sick slept none " through the whole course of the com- " plaint, which continued for twenty-five " or thirty-two days. When blood-letting " was omitted or used very sparingly, and " vomits were given early and afterwards " repeated with refrigerants, laxatives, and " expectorants, as far as the stomach would " bear, the patient generally recovered. Very " strong emetics did not answer."

The reader, however, will find some difference of opinion respecting the employment of blood-letting in the bilious pleurisy. Bianchus, in his Historia Hepatica, regards it as pernicious only at the commencement. From what was said concerning the pleuritis verminosa, which is also applicable to the

case before us, it is more than probable that the lungs in bilious pleurisy are not inflamed at an early period, which may account for blood-letting being less successful then than when the disease is farther advanced. It is asserted by Cleghorn, respecting a bilious pleurisy which came under his observation, that much blood letting was necessary, and that, after trying many remedies, this, with proper means to clear the stomach and bowels, was found the only successful mode of treatment. The only way in which we can account for such opposite opinions is by supposing something different in the nature of the different epidemics. And, indeed, it must happen, that in different epidemics the tendency to inflammation of the lungs, from the season of the year, state of the weather, or some less evident cause, will be different; and the greater this tendency, it is evident the sooner will the inflammatory symptoms succeed the bilious, and the more early may blood-letting be employed with advantage. It has been observed, that the blood in the pleuritis biliosa does not shew the buffy coat, but it is more than probable that this observation does not apply universally.

It

It is remarkable that bilious pleurisies sometimes obey the tertian type.* When this happens we must suppose that no real inflammation exists. Capel justly observes, in his treatise "De Pneumonia Typhode," that pneumonia never assumes, as some have supposed, a regular intermitting form.

The foregoing observations point out in a striking manner the necessity of clearing the primæ viæ in all cases of pneumonia, whether symptomatic or not.

It is observed above, that we frequently meet with schirrus of the liver, pancreas, or spleen, in those who die of pneumonia, and more frequently, we have reason to believe, than can be ascribed to chance. May not schirrus of these parts, particularly that of the liver, by an irritation similar to that which produces the pleuritis verminosa and biliosa, sometimes excite pneumonia? In a large proportion of the dissections of those who died of pneumonia, given by Morgagni, the liver or spleen was found indurated or otherwise unhealthy, or some

* Bianchus, Historia Hepatica.

of

of the other abdominal viscera, particularly the pancreas or ovaria, were diseased. Pneumonia is comparatively rare in young children. Dr. Beardsley, in the Memoirs of the Newhaven Society, however, mentions an instance of an infant dying of this complaint, in whom the liver was found to be schirrous. I have several times, indeed, seen pneumonia evidently induced by this affection of the liver, and in one of my patients who died of schirrous liver, the lungs throughout their whole extent adhered to the sides of the chest.

The other cases of symptomatic pneumonia require little or no comment. The pleuritis arthritica I shall have occasion to mention when I come to speak of gout. The pleuritis morbillosa was noticed in the Chapter on Measles; there is nothing particular either in its symptoms or mode of treatment. The pleuritis hydrothoracica appears in general with little pain but much dyspnœa, and is best relieved by repeated blisters applied to the chest, and small doses of calomel. The pneumonia phthisica, that inflammation of the lungs which forms the

first

first stage of phthisis, has, though with little propriety, been ranked among the symptomatic pneumonia. We shall soon have occasion to consider it at length.

The complaint which has been termed the bastard pleurisy, is nothing more than rheumatism, that is, an inflammatory affection of the intercostal muscles, producing an acute pain of the side, increased on inspiration. It is attended in general with little or no fever and scarcely with any cough. An inflammation of the intercostal muscles often spreads, as I have myself repeatedly seen, to the pleura and lungs, producing a true pleurisy. Thus we find a case related by Huxham, in which some of the muscles of the thorax were wounded, from which, the inflammation spreading to the viscera, the patient soon laboured under all the symptoms of pneumonia.

But whether bastard pleurisy be the sole disease, or combined with pneumonia, its presence may always be detected by the increase of pain which takes place on the exertion of the inflamed muscles. Besides, where it is present to a considerable degree, the

the patient generally complains of soreness on the seat of the pain being pressed. The bastard pleurisy generally yields to local means, or these combined with the internal use of the guaicum, or the means which promote a free flow of sweat. In short it is to be treated as a case of chronic rheumatism.

There is still another variety of pneumonia which demands attention. It has been termed the putrid pneumonia. Comparatively few authors have treated of this form of the complaint; in the accounts which we have of it there are many observations which cannot be reconciled, and the subject, upon the whole, is involved in some confusion. The following, as far as I can judge, is a general abstract of what has been ascertained respecting this complaint.

The pneumonia putrida is of two kinds, idiopathic and symptomatic. The latter is that which is most generally known; it consists merely in pneumonia supervening on the typhus gravior. This is the only putrid pneumonia acknowledged by Dr. Cullen. But it seems ascertained by the observations

observations of many writers, that there is an idiopathic putrid pneumonia, a primary inflammation of the lungs accompanied with strongly marked typhus. And this form of the disease has frequently appeared epidemic, while the more common form did not shew itself. The idiopathic putrid pneumonia, when exquisitely formed, appears with nearly the same symptoms as the symptomatic, only the inflammation is present from the commencement.

It has been observed to attack chiefly those of debilitated habits, frequently such as labour under chronic diseases of debility, the scurvy for example. Very young and very old people and females, Cappel observes, are most subject to it. He also thinks, that the presence of tubercles and an ill-formed thorax dispose to this form of the disease.

The occasional causes of the putrid pneumonia are nearly the same with those of the phlegmasiæ in general. Among its causes Cappel enumerates impurities of the primæ viæ, and observes, that the common pneumonia may be changed into the putrid by heating or very debilitating medicines.

The

The usual treatment of pneumonia is inadmissible in this form of it. All who were bled, Tissot observes, died. The general plan of treatment seems to be a combination of that of typhus with the local treatment of pneumonia and proper measures for clearing the primæ viæ. The employment of all these means, however, requires much attention.

When the tendency to gangrene and hemorrhagies is great, blisters are improper, both on account of the evacuation which they occasion, and because they sometimes give rise to gangrenous sores. On these accounts Cappel advises the blisters to be removed as soon as the skin is inflamed. Local blood-letting he thinks injurious; others are of a different opinion, and it is only, perhaps, where the debility is very great that this remedy is to be dreaded. But there are instances of bleeding from scarification of the side in this complaint becoming so obstinate and profuse as to baffle every attempt to stop it till the patient expired. Dry cupping, where the debility is very great, is used with more safety, and

often brings relief. Cappel recommends fomentations, cataplasms, volatile liniments, and warmth applied in every other way. He also particularly recommends watry vapours drawn in with the breath.

With respect to medicines acting generally, there is none of equal efficacy with the bark and wine; the former is particularly recommended by Quarin and others. The expectoration is often increased, says Quarin, and the patient as it were snatched from death by the bark, especially if the fever, as sometimes happens, shews a tendency to remit. The bark, however, does harm if given incautiously. If the inflammatory symptoms run high, Cappel justly observes, the bark is hurtful. Wine is of more general use. There is no case of putrid pneumonia where it may not be employed with advantage. The quantity must be proportioned to the degree of debility. I have given port wine to the amount of a bottle in the day in symptomatic putrid pneumonia with the best effects. The other remedies acting on the system in general are less to be depended on. The ammonia

acetata

acetata has been regarded as useful when the skin is very dry. Antimonials given cautiously are of service when the expectoration is difficult. The seneka is not to be depended on. Cappel recommends camphire given in small and repeated doses, but relies more on musk, which he gave in very large quantity where other means had failed. Mercury he thinks useful if given so as to prevent its occasioning much evacuation. Opium has been much recommended for allaying pain, procuring sleep, easing the cough, and stopping diarrhœa. The observations made on the diet in typhus are applicable here. It is, however, of still more consequence to guard against every thing that deranges the primæ viæ. It has just been observed that the presence of noxious matter in these passages often has much share in producing the putrid pneumonia; this is particularly the case when it appears as a symptomatic affection in typhus. Whether symptomatic or idiopathic, it is often accompanied with the symptoms peculiar to bilious pneumonia. In the putrid pneumonia therefore clearing

the alimentary canal forms an essential part of the treatment. The operation of cathartics, however, is too debilitating, and it seems very generally admitted, both on this account and because the chief cause of irritation seems to be in most instances lodged in the stomach, that emetics are the best means of removing it. It appears from the observations of some, says Quarin, that the life of the patient has been saved by the operation of an emetic. Emetics, says Cappel, are useful if the stomach be oppressed and in other cases at the commencement, especially if the disease arise from contagion. They are also useful when the matter to be expectorated is copious and viscid, but we must be cautious, he adds, that we do not occasion purging instead of vomiting, which often proves fatal. Schroeder also remarks, that if the emetic in putrid pneumonia occasions purging instead of vomiting, the complaint almost always proves fatal. On this account, Cappel recommends ipecacuanha in preference to other emetics, as large doses of it may be given with safety. Other writers make similar observations.

When

When we have succeeded in removing the symptoms of putrid pneumonia, it is necessary to have recourse to bitters and aromatics, and, if it can be given without tending to renew the inflammation, to the bark, in order to strengthen the stomach and system in general, which is the best means to prevent a relapse.*

SECT. IV.

Of the Causes of Pneumonia.

THOSE who are strong, vigorous, and full of blood, use much exercise, and readily digest their food, are most subject to pneumonia, especially such of this description who are subject to coughs. The least

* For an account of the putrid pneumonia the reader may consnlt Camerarius de Pleuritide Maligna, in the 2d vol. of Haller's Disput. ad Morb. Hist. et Curat. Pertinent. De Preval, on Vomiting in Putrid Pneumonia, in the same volume. Quarin de Febribus, Huxham's Treatise on Peripneumony, Schroeder's Treatise, De Pleuritidum Partitione, in his Opusc. Med. and a Treatise, De Pneumonia Typhode, by Ludov. Christoph. Guil. Cappel.

subject to this complaint are those of a relaxed and weakly habit, bad digestion, and an indolent disposition. It has been an observation from the infancy of medicine, that those who complain of acidity of the stomach are not subject to pleurisy. It is true, indeed, that the latter are particulaarly subject to pains which resemble pleuritic pains, and may deceive the inexperienced; these pains, however, never affect the pulse, and generally disappear on the expulsion of wind from the stomach.

Middle life or rather later, Dr. Cullen says, between 45 and 60, is the period most subject to inflammation of the thoracic viscera. Cases of pneumonia are comparatively rare under puberty, and they are not frequent in the aged. Old people, we shall find, are more subject to the peripneumonia notha than to the true pneumonia.

Winter and spring, especially the latter, are the seasons at which pneumonia most frequently appears. It is generally the more frequent, the colder, the moister, and more changeable the weather is. Huxham says he has seen the same epidemic in low warm situations

situations near the sea prove only a catarrhal fever, in more exposed cold situations a true pneumonia. In the observations of the army physicians, however, we find pneumonia proceeding from extremes of weather, whether warm or cold. Dr. Donald Monro observes, that the soldiers were attacked with pleurisies at all seasons of the year when they were exposed to the intemperance of the air, whether it was very cold, very warm, very dry, or very moist. Sir John Pringle makes similar observations.

That mode of life which has been mentioned as predisposing to inflammatory complaints in general is most favourable to pneumonia, the use of a large proportion of animal food, especially if high seasoned, and the indulgence in the free use of fermented liquors. The same may be said of every thing which occasions habitual fullness. Repelled eruptions, suppressed excretions, even drying up an issue or the healing of an old sore, predispose to this complaint.

Of the exciting causes of pneumonia the sudden or partial application of cold is the chief. A cold air rushing through narrow

chinks upon the naked body, says Boerhaave, which has been heated by exercise or fire, taking suddenly large draughts of cold water under the same circumstances, or exposure to a very cold north wind, often excite pneumonia. Any of the predisposing causes applied suddenly and to a great degree may excite the disease. Such are the causes which pneumonia has in common with the other plegmasiæ.

Those which are peculiar to it act immediately on the lungs; violent exercise, forcing the blood too rapidly through the lungs, violent coughing, receiving acrid vapours with the breath, other complaints of the thoracic viscera, asthma, hydrothorax, callosity of the pleura, or similar affections pressing on the lungs.

Adhesions of the pleura are generally ranked among the causes of pneumonia. It is only, however, when very extensive that they are apt to excite this disease.

There are few of the phlegmasiæ so easily renewed in those who have formerly laboured under them as pneumonia. Hoffman says he has seen the same person attacked

attacked with pneumonia four or five times within a twelvemonth.

Pneumonia is frequently epidemic, but never, it is observed by Morgagni and others who have been most conversant with this complaint, contagious, as some have supposed. This observation, however, only applies to the common form of the disease; it seems very generally believed that the putrid pneumonia is contagious. Some diseases of the abdominal viscera are to be ranked among the causes of pneumonia; this subject has already been treated of at sufficient length.

SECT. V.

Of the Treatment of Pneumonia.

THE treatment of pneumonia, like that of the other phlegmasiæ, may be divided into general and local. The most vigorous general means are necessary in all cases of pneumonia. As they form the most important part of the treatment, and that which is first recommended, it will be proper to consider them before the local remedies.

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The mode of treatment in pneumonia differs but little from that of the phlegmasiæ which have been considered. The chief difference arises from the nature and importance of the organ affected. The first remedy employed is general blood-letting, which, if the symptoms are urgent, should be pushed far enough either to relieve them while the blood flows or occasion a tendency to syncope. It has been observed, that those who are subject to syncope on the loss of blood, bear the second or third blood-letting better than the first, which is an additional argument for not pushing the blood-letting till syncope supervenes, at one time recommended in this complaint, but now justly regarded as a very precarious practice.

It is supposed by many, that bleeding from the arm on the side affected in pleurisy is more effectual than from the arm of the other side. Dr. Cullen does not seem to think this opinion groundless. It may be safely asserted, however, that blood-letting from the side affected is not of such importance as to induce us to recommend it where

where it is morc convenient to let blood from the other side.

Our view in letting blood from the arm is to diminish the vis a tergo, and this is done equally well from whatever vein the blood is taken, provided it is of the same capacity and equally near the heart; and as to the effects of local blood-letting, which I have already had occasion to consider at sufficient length, they are procured with most certainty in this complaint by bleeding from the chest.

Werlhoff has even gone so far as to assert, that in one instance he had seen the blood drawn from the side not affected natural, while at the same time blood drawn from the side affected shewed the buffy coat. Other physicians, however, have maintained, that the side not affected is that from which blood should be taken in pneumonia. The reader will find an account of the disputes on this subject in Van Swieten's Commentary on Boerhaave's 890th Aphorism. In many places they were conducted with great acrimony, and in Portugal an edict was issued by Government prohibiting

prohibiting any physician from letting blood in pleurisy from the side affected.

It was a custom among some of the old practitioners to open the arteries of the hand in pneumonia, and that which lies between the thumb and forefinger was generally chosen. Dr. Friend observes, in his History of Medicine, from the days of Galen to the beginning of the sixteenth century, that, that physician was the first who recommended this mode of blood-letting in the complaint before us. Gesnerus, in his Epistle to Cratto, and some other writers, have maintained, that there is no part of the arm from which it is proper to let blood, and that the patient can only be saved by drawing it from the foot. On such observations any comment is unnecessary. When the jugular vein can be readily struck it is probably of advantage to take the blood from a vein which pours its contents into the thorax. Boerhaave considers it of so much consequence that the blood should be drawn off as suddenly as possible in this complaint, that he not only advises it to be taken from a large orifice, but that the

the patient should endeavour to quicken its flow by breathing quickly and coughing. In practising this it is evident that some caution is requisite.

There are few cases of pneumonia which yield to the first blood-letting. For even where it gives most relief the symptoms generally soon return, and demand a repetition of the same remedy.

If it be found, says Boerhaave, on repeating the blood-letting that the buffy coat has disappeared, we are warranted to dissuade from the further use of the lancet. And the reader will find this observation made by many others. But Dr. M'Bride has justly observed, that the inference drawn from the disappearance of the buffy coat is only true when the symptoms at the same time abate, for there are many inflammations where the buffy coat is never seen. "Some practical physicians," says Dr. Millar, "have directed blood to be taken till "the sizy crust which generally covers its "surface disappears. But this rule is ex-"tremely equivocal; in some the blood puts "on this appearance at the beginning, in

"others

"others not till towards the decline of the "disease, and sometimes no such crust is "observed through the whole course of it. "The only certain indication therefore arises "from the mitigation or violence of the "symptoms."

Yet the appearance of the blood which has been drawn is not to be wholly overlooked, for the buffy coat becoming less thick is generally a sign of the disease becoming milder, and it often happens that there is no more occasion to draw blood after it disappears.

Triller and some other respectable writers have advised, in repeating the blood-letting in this complaint to take the blood from different parts of the body. The arm of the side affected he recommends as the best place for the first blood-letting, for the second he considers the foot of the same side the proper place, and for the third the other foot. Little need be said of this conceit; the reasons which determine our choice of the vein in the first blood-letting are of equal force in repeating the remedy.

It has been said, that blood-letting in

pneumonia

pneumonia is improper after the fourth day. The truth of this observation is now called in question, and it is very generally admitted that although it is most effectual when had recourse to within the first three or four days; it must be employed if the symptoms of pneumonic inflammation are well marked and the strength of the patient sufficient to bear it any period of the disease. In cases where the symptoms have occasionally remitted I have known blood-letting in the second or third week attended with the best effects; if the disease has run its course without any evident remission, blood-letting is seldom proper at so late a period.

What chiefly demands attention in the repetition of blood-letting in pneumonia, is not to employ it after the tendency to suppuration has supervened, which is known by the symptoms above pointed out.

The reader will find stated by many writers, the quantity of blood which must upon the whole be lost in the cure of pleurisy. In adults, says Sydenham, pleurisy is seldom cured with the loss of less than forty ounces of blood. It is evident, however, that

that no general rule of this kind can be laid down. The repetition of the blood-letting, as well as the quantity to be drawn at each blood-letting, must be determined by the state of the symptoms and the strength of the patient.

The reader will find it a favourite opinion with the majority of writers, that as soon as spontaneous evacuations which may prove critical take place, all artificial evacuations should be discontinued, as tending, it is said, to disturb the salutary efforts of nature.*

When a spontaneous evacuation relieves the symptoms there is no occasion for blood-letting, and it is proper at all times as much as possible to save the patient's strength; but when any such evacuation occurs without bringing relief, or when they do to a certain degree bring relief, but the symptoms are still such as threaten danger, their presence must not deter us from the employment of blood-letting, nor does blood-letting cautiously employed tend to interrupt

* See the 889th Aphorism of Boerhaae, Dr. Millar's Account of the Diseases of Great Britain, and other works on this disease.

a free expectoration or other salutary discharge, but frequently promotes it.

Although at all periods of the disease, when the symptoms run high, blood-letting is a remedy on which we chiefly depend, there can be no doubt that by many it has been carried too far. There is no complaint in which an unguarded use of the lancet is not dangerous. If too much blood is taken away in pleurisy, says Hoffman, the expectoration will be impeded, the obstruction confirmed, and sphacelus will be apt to ensue.

It has been observed above, that when the disease has been tedious and the strength much reduced, the matter poured into the bronchiæ stagnates there, the patient being unable to free his lungs from the load till it accumulates in such quantity as to occasion suffocation. The same debility, with its consequences, are to be dreaded from the unguarded use of the lancet. But although the debility induced by blood-letting produces neither suffocation nor gangrene, yet it often proves the cause of death by giving rise to other complaints. Where blood-

letting has been much employed, pneumonia is frequently followed by hydrothorax or asthma.

When a tendency to hemorrhagy appears in pneumonia, it is by many judged better to promote the hemorrhagy than to draw blood from any other part. If epistaxis, bleeding from the nose, occurs, we are advised to foment and irritate the nares. When hemorrhois supervenes, if the flow of blood is not sufficient to relieve the symptoms, it has been the practice to increase it by fomenting the parts in its neighbourhood and applying leeches. If, however, the hemorrhagy thus increased does not soon relieve the symptoms, we must have recourse to blood-letting in the usual way.

Some difference of opinion has arisen concerning the employment of cathartics in pneumonia; some use them for the purpose of increasing the effects of blood-letting. There is the same objection, however, to this practice in pneumonia as in other cases which have been considered, with this in addition, that a spontaneous diarrhœa, espe-

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cially at the commencement of the complaint, is generally hurtful. It is true, indeed, that in the case of spontaneous diarrhœa, the injury may proceed rather from the irritating matter which occasions it, than from the diarrhœa itself. Experience, however, seems not to warrant the frequent employment of cathartics in this complaint, except for the purpose of freeing the primæ viæ of any irritating matter which may oppress them. In this, as in other cases of phlegmasiæ, calomel is the best cathartic. Where there are no symptoms of disordered bowels, small doses of calomel, by their anti-inflammatory tendency, are still useful; but it is better to procure the regular expulsion of the fæces by glisters, than risk much cathartics.

The impropriety of emetics in all cases which are not immediately connected with the state of the stomach is so apparent, that it is reprobated by almost every writer on the subject.

But neither the fear of exciting vomiting, nor occasioning catharsis, should prevent the guarded use of nauseating doses when the inflammatory symptoms are considerable. These, Dr. Cullen justly observes,

particularly the antimonials, are the best means of promoting expectoration; and they have the additional advantage of relaxing the skin, which is of so much consequence in pneumonia.

The advantage derived from spontaneous sweating in this complaint has induced many to recommend more powerful sudorifics, but these have not answered the expectations formed of them. I have already had occasion to observe, that the effects of spontaneous sweating are seldom obtained by that which is procured by art; when, however, such a flow of sweat does supervene as relieves the symptoms, it is proper to encourage it by dilution and gentle diaphoretics.

It sometimes happens that even spontaneous sweating, particularly if it be partial and clammy, serves no other purpose but that of reducing the strength. Such sweating must always, though with caution, be checked, which may generally be done by diminishing the allowance of fluid and removing part of the bed clothes.

It appears from what was said of the symptoms of pneumonia, that there is no

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evacuation so salutary in this complaint as a free and copious expectoration. On this account the various medicines termed expectorants are very generally employed in pneumonia. Few of them, however, are well adapted to this complaint. The various gums and even squills, by the irritation they occasion, frequently increase the febrile symptoms, and thus even render the cough tighter. From the relief obtained from these medicines in asthmatic cases, and from such cases being often confounded by practitioners with pneumonia, it seems to arise that they are very generally recommended in the latter complaint; for, as far as I can observe, they do no good in pneumonia, and often much harm by increasing the fever and the sense of tightness in the chest.

The ammonia is sometimes serviceable in promoting expectoration towards the decline of the disease. But if we except nauseating doses of emetics, we shall find no expectorants so useful in pneumonia as mucilaginous mixtures, anodynes, and watery vapour received into the lungs. It was once a prevalent opinion, that the advantage derived from mucilaginous medicines arose from their

being received into the mass of blood and carried to the lungs, where it was supposed they rendered the matter about to be expectorated of a proper consistence. This supposition led to forcing the patient to take large quantities of them, which, by oppressing the stomach, often did more harm than good.

It is now pretty generally admitted, that the chief effect of these medicines is that of besmearing the fauces, and allaying the irritation, which keeps up a constant cough, and thus prevents the matter poured into the lungs from remaining there till it has acquired a due consistence,* without which it cannot be freely expectorated. To answer this purpose they should be given in small and frequently repeated doses. They seem also to be of some service in lining the stomach and bowels, and thus preventing any irritation from their contents. As might be expected from this view of the manner in which these medicines act, they are found most serviceable when the expectoration is thin and watery. In such cases opiates are

* It is a law of the animal œconomy, that while secreted fluids remain in any of the cavities, the absorbents are constantly employed in taking up the thinner parts.

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the most powerful expectorants when they can be given without increasing the inflammatory symptoms; their operation is similar to that of the foregoing medicines, they allay the irritation which keeps up the cough, and prevents the matter acquiring a due consistence, but by lessening the sensibility, their effects are much more certain.

There is some difference of opinion respecting the employment of opiates in pneumonia, whether for the purpose just mentioned, or that of allaying pain. It would appear from the observations of foreign writers, that on the Continent they are very frequently employed with the latter intention. In young people, says Hoffman, small doses of opium combined with nitre and diaphoretics may be employed for the purpose of allaying pain, but in advanced life, where the juices are thick, they render the expectoration more difficult.

The practitioners of this country almost wholly confine the use of opium in pneumonia to its latter stages. When the difficulty of breathing is abated, the cough remaining, with more or less pain and watchfulness,

fulness, opiates are employed with safety and great advantage.

Watery vapours are chiefly useful when the matter to be expectorated is viscid and tenacious. Some recommend impregnating these vapours with a variety of articles, onions, which are among the best, a variety of herbs, honey, &c. Vinegar has been particularly recommended. Dr. M'Bride advises a large spunge dipt in vinegar to be applied to the mouth and nostrils.

It is needless here to repeat what has been said of the use of saline medicines, particularly the saline draughts and nitre, which are useful in all cases attended with synocha.

All agree respecting the best regimen in pneumonia; it should be strictly anti-inflammatory. All kinds of animal food or heating fluids must be avoided, and the diet should consist of light vegetables with much dilution. The temperature of the patients room should neither be so high as to increase the rapidity of the circulation, nor so low as to run the risk of increasing the inflammatory affection of the lungs, which a very

cold

cold air is found to do. A temperature of about 60° is the best, and it is of consequence that it should be kept as uniform as possible.

With regard to exercise, it is hardly necessary to observe that it should be avoided. Some, indeed, have advised the patient to be as much out of bed as he can easily bear. In this practice, however, there is much risk, and, except in the decline of the disease, no advantage whatever.

The reader will perceive that, if we except the means for allaying the cough, increasing the expectoration, and clearing the primæ viæ, there is but one view in the general means employed in pneumonia, namely, to diminish the vis a tergo. It appears from what was said in the third volume, that certain medicines possess this power without occasioning any evacuation. There is reason to believe that some of these will prove valuable medicines in visceral inflammation. The digitalis is the only one of this class which has obtained much attention, and, from the trials which have been made with it, it would appear that it is more

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likely to be of service in such cases than in the complaint in which it has for some time past been so frequently exhibited.

We have reason to believe, from observations related in the first chapter of this volume, that lessening the quantity of oxygen in the air which the patient breathes will be a means of relief in pneumonia.

We are now to take a view of the local remedies employed in this complaint; for I shall finish the consideration of the treatment in pneumonia while the inflammatory state continues, before I make any remarks on the means to be pursued when the unfavourable terminations of this complaint take place.

The most important of the local remedies employed in pneumonia are, local blood-letting and blisters. The former is the chief resource when the patient's strength is so far reduced that he can no longer bear general blood-letting, and it is chiefly under such circumstances that it has been employed. But it would appear, from the observations made in the third volume on the treatment of the phlegmasiæ, that the purposes

poses served by general and local blood-letting are not exactly the same; that the one is better calculated to relieve the local congestion, the other to diminish the vis a tergo; from which it is evident, that where-ever the symptoms run high there will be advantage from combining these modes of blood-letting.

Independently of other considerations, the strength will thus be saved, for it will always be found, that by combining local with general blood-letting, the extent to which it will be necessary to carry the latter will be much lessened.

With regard to the employment of blisters, some circumstances formerly insisted upon must be particularly attended to here. In all cases of phlegmasiæ, we have seen where the fever is considerable the use of blisters must be delayed till the symptoms are mitigated by proper evacuations, it being found that the early application of blisters in such cases tends to obviate the effects of these on which we chiefly rely. The period proper for the application of blisters in pneumonia must vary therefore according to the

the effects of the blood-letting. It is necessary that before their application the hardness of the pulse should be considerably lessened.

The blister should be pretty large and applied immediately over the seat of the pain. Some think considerable advantage is derived from permitting them to remain applied for several days. If the symptoms do not readily yield, it is proper to support the discharge from the blistered part, or, what is better, to apply a succession of blisters. It is necessary to apply them to some part of the thorax, little or no advantage arising from them if applied to more distant parts.

Fomentation of the side affected in pneumonia is a very ancient practice, and was recommended by Hippocrates even before the employment of blood-letting. Fomentation of the pained side, indeed, probably from its simplicity, seems to have been the first remedy employed in pneumonia. At present, however, it is little relied on, the benefit resulting from its use seldom being found to compensate the trouble it occasions.

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It is still recommended, however, by Hoffman, Burserius, and other foreign writers. In bastard pleurisy, which is nothing more, we have seen, than an inflammatory affection of the intercostal muscles, the relief derived from fomentations is very considerable, and this has probably contributed to their being employed in pneumonia, many not distinguishing the two diseases with much accuracy.

As the pain in pneumonia is aggravated by the motion of the ribs, it is recommended by Boerhaave and others to wrap a roller round the thorax, by which, the motion of the ribs being prevented, considerable relief is obtained.

Such seems to be the treatment of pneumonia best warranted by experience. It is true, indeed, that other remedies have been celebrated in this complaint. These, however, have experienced the neglect they deserve, and the authority of Van Helmont will now go but a short way towards inducing us to trust the cure of this complaint to dried goat's blood; nor do many of the

specifics

specifics which have been recommended since his time, appear less absurd.

A very few observations respecting the means to be employed when any of the unfavourable terminations of pneumonia have taken place, will be sufficient, for, in fact, very little can be done. If a patient recovers after an abscess is formed in any part of the lungs, he owes his safety more to the accidental seat and size of the abscess than to any remedy we possess.

If the abscess evidently points outwards it is proper to make an incision through the intercostal muscles, by which the patient has sometimes been saved. Dr. Donald Monro mentions instances in which this operation succeeded, and thinks it should more frequently be had recourse to. There is hardly any chance of recovery if the abscess is permitted to burst into the substance of the lungs; instant suffocation or hectic fever, with purulent expectoration, according as the abscess is large or small, being the consequence. In neither of which cases can medicine be of any avail; in the latter, indeed, a variety of means have been proposed,

proposed, but in considering the phthisis pulminalis we shall find them all equally ineffectual. Nor can medicine do more where the abscess has burst into the cavity of the thorax forming the empyema; in this case, indeed, it has been proposed, that the matter should be evacuated,* as in the case of abscess pointing externally, but here the operation promises but little, and I am not acquainted with any instance in which it has been successful.

It has sometimes happened, we have seen, that abscesses of the lungs will remain for a long time without impairing the health, and that the ulcers formed by small abscesses where the habit is favourable will heal spontaneously. In such cases medicine has nothing to do.

If an abscess in the lungs be generally hopeless, that of gangrene always is so. It is probable, indeed, that altho' we had means capable of checking the gangrene, the hemorrhagy which constantly attends it in this organ would always be sufficient to prove fatal. Notwithstanding this case

* See Boerhaav. Aphor. Aph. 896.

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being so hopeless, plans of cure have been proposed. Boerhaave, in his 902d and 903d Aphorisms, lays down what appears to him the most probable means of relief. These, however, are evidently dictated by hypothesis, and their being generally abandoned is a sufficient proof of their inefficacy. Neither Boerhaave, nor his commentator Van Swieten, indeed, give a single case in which they were put in practice. Can it be seriously imagined that the application of the actual cautery to the side can be of any avail when gangrene of the lungs has taken place? And Van Swieten, in adducing the authority of Aretæus in favour of the practice, seems to have committed an error, for it does not appear that it was recommended by him as a means of checking the gangrene, but lessening the inflammation, with which view it might certainly be employed with advantage. "When in pneu-"monia," Dr. Millar observes, "gangrene "has taken place little can be expected from "medicine. If any thing can save the "patient it is a liberal use of the Peruvian "bark." The mention even of this powerful

erful medicine might have been omitted where all seem equally useless.

It is observed above, that pneumonia has sometimes, though rarely, terminated in a callus or schirrus of the lungs. This termination is less unfavourable than the foregoing. It is, however, extremely obstinate, and generally continues to tease the patient for the remainder of life. Medicine seems to have little effect in resolving this induration; a regular diet and exercise, however, if they do not remove, generally in some degree mitigate it.

When pneumonia terminates in hemorrhagy of the lungs, if there is time for the use of medicine, the mode of treatment is the same as in other cases of hæmoptysis.

It sometimes happens that pneumonia leaves the patient so much debilitated that he has not sufficient strength to cough up the phlegm which attends the resolution of the inflammation. When this is the case it now and then accumulates in such quantity as to occasion suffocation. Here we must have recourse to wine, and if there appears to be no tendency to a return of the inflam-

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matory symptoms, to the Peruvian bark. It is particularly necessary for some time after pneumonia carefully to avoid its exciting causes.

CHAP. XI.

Of Peripneumonia Notha.

DR. CULLEN, in his System of Nosology, regards this complaint merely as a variety of pneumonia, and it cannot be doubted that it often is nothing more than inflammation of the lungs considerably modified by peculiarity of habit. Sometimes, however, it has much less of the appearance of pneumonia, and upon the whole differs from it so materially that notwithstanding what Dr. Cullen says of it in his System of Nosology, he found it necessary in his First Lines to treat of it separately from pneumonia. Although we admit, indeed, that the complaints are always of the same nature, their symptoms and mode of treatment are often so different, that it is necessary, in order to avoid confusion, to treat of them separately.

In laying before the reader the symptoms of peripneumonia notha, I shall in the first place give a view of the disease as it appears when it differs most from pneumonia, and afterwards point out in what manner it insensibly assumes more of the appearance of this complaint, till at length it is difficult to say by which name it should be called.

SECT. I.

Of the Symptoms of Peripneumonia Notha.

THE peripneumonia notha often makes its attack with symptoms so similar to those of a common catarrh, that it is hardly to be distinguished from it. In other cases it comes on with languor, restlessness, some degree of cold, shivering, or chills alternating with fits of heat, without being accompanied with catarrhal symptoms.

As the disease advances, which is generally without much fever, the patient complains of dyspnœa, much anxiety, and a sense of oppression and tightness about the precordia. A cough generally comes on at

an early period, attended with an expectoration of a white viscid frothy matter, which is rarely tinged with blood.

The cough often becomes extremely violent, attended by a head-ach, which in many cases is almost intolerable, giving a sensation, to use Sydenham's expression, as if the head were torn in pieces. This symptom is peculiarly characteristic of the disease.

Vomiting is frequent at an early period, especially when the cough is very violent, by which it is often excited. The matter thrown up by vomiting, as in simple fever, generally consists of a viscid insipid mucus.

But the cough is now and then wholly absent in peripneumonia notha. In this circumstance, and the occasional violence of the cough as well as in the head-ach and vomiting, this complaint differs essentially from the true pneumonia. It chiefly differs from it, however, in the febrile symptoms, which in the well formed peripneumonia notha are generally mild and often entirely wanting, the pulse at no period of the complaint being more frequent than natural, except

cept when hurried by the cough, the tongue remaining moist, and the functions in general seeming but little deranged. The urine, however, is generally high coloured and turbid, and even where the febrile symptoms are most moderate the blood frequently shews the buffy coat.

The functions of the mind are in general but little disturbed. There is often, however, a considerable degree of vertigo, accompanied with much flushing of the face, and not uncommonly a degree of drowsiness which approaches to coma. The pain in the thorax is often absent, or so trifling that the patient never complains of it; he sometimes describes it as an obscure dull pain which is rather troublesome than severe.

There are few complaints in which the prognosis is more difficult than in the peripneumonia notha, for when there is little appearance of danger a violent exacerbation often suddenly takes place and terminates the patient's life.* And this even happens

* See the observations of Boerhaave, Cullen, and Lieutaud, and the 11th and other sections of the 21st Epistle of Morgagni de Causis et Sedibus Morborum.

at the very time when a considerable abatement of the symptoms has afforded hopes of recovery.

In most cases, however, death is for some time preceded by an alarming train of symptoms. A degree of coma supervenes, the face becomes hippocratic, the nails livid, and the voice hoarse, the patient complaining of great anxiety and a sense of oppression; the limbs at length become cold and the vital powers gradually sink.

When the peripneumonia notha terminates favourably, it is still more generally attended, than in the true pneumonia, by a copious and free expectoration; and if there be any thing which affords a just prognosis in this complaint, it is the state of this symptom. The greater the debility, the more oppressed the lungs, and the less free and copious the expectoration, the worse is the prognosis.

On reviewing the foregoing account of the peripneumonia notha, the reader will readily perceive how easily this complaint may assume the form of the true pneumonia. If a cough attend the peripneumonia notha, which is neither violent nor

attended

attended with vomiting, if the pain be more considerable than it usually is in this complaint, and the febrile symptoms run higher, it is not possible for us to distinguish the case from true pneumonia, or rather it must be regarded as such, and on dissection it will be found that the lungs are actually inflamed. Dissection, indeed, has often detected inflammation of the lungs when the symptoms were those of well formed peripneumonia notha, as appears from the dissections of Morgagni and others. In many cases, however, no traces of inflammation can be found, and the peripneumonia notha seems almost as much allied to catarrh as to pneumonia, and runs into it by degrees equally imperceptible. The ancients, indeed, seem to have confounded it with catarrh.*

SECT. II.

Of the Causes of Peripneumonia Notha.

THIS is one of the diseases which has been accurately described only in later times.

* Eller de Cog. et Cur. Morb.

"A disease under this name," Dr. Cullen observes, "is mentioned in some medical "writings of the sixteenth century, but it "is very doubtful if the name was then "applied to the same disease to which we "now apply it. It appears to me, that un-"less some of the cases described under the "title of catarrhus suffocativus be supposed "to be of the kind I am now to treat of, "there was no description of this disease "given before that by Sydenham, under the "title I have employed here."

In the following paragraphs he observes, that, after Sydenham, Boerhaave is the first author who in a system noticed peripneumonia notha as a distinct disease, and that, notwithstanding the remarks of Lieutaud, who with confidence affirms that the diseases described by Sydenham and Boerhaave under the title of peripneumonia notha are different, he is of opinion, that not only the disease described by Sydenham and that described by Boerhaave are the same, but that, that described by Lieutaud himself is not essentially different from them. And nobody, I think, who compares the accounts of

of this disease given by the foregoing writers, and distinguishes the accidental from the essential symptoms of the complaint, can hesitate to agree with Dr. Cullen.

The peripneumonia notha is most apt to attack those advanced in life, and old people are more subject to it than those who are little past the middle of life. Women and others of a delicate habit are less subject to it than the robust. It is common in the full and phlegmatic, especially those who have indulged much in the use of fermented liquors, particularly distilled liquors, or have fallen into a bad habit of body from other causes. Those who have been subject to catarrhal affections, who are indolent, Quarin observes, and use too firm a diet, are particularly subject to peripneumonia notha, and may be attacked with it at an earlier time of life than that at which it usually appears. This, like the true pneumonia, seems often connected with the state of the liver, which is probably one reason why those addicted to the use of fermented liquors are subject to it.

The exciting causes of peripneumonia notha

notha are similar to those of the phlegmasiæ. It is most prevalent in marshy countries, especially when the air is cold or liable to sudden changes of temperature; hence spring and autumn are the seasons at which it chiefly prevails, and it is equally occasioned by a change from heat to cold, or the contrary.

It is frequent during the prevalence of contagious catarrhs, which in the predisposed frequently terminate in peripneumonia notha. This complaint may be excited by all the various irritations applied to the lungs, which are mentioned as occasional causes of pneumonia.

Some remarks on the proximate cause, or in other words, on the nature of peripneumonia notha, which, from what has just been said, seems to differ so essentially from the phlegmasiæ, may be judged proper. The nature of peripneumonia notha, however, seems at present but little understood. We appear, indeed, to class together under this name complaints very different in their nature. Nor can this confusion be avoided till we are acquainted with some diagnostic

which

which may point out whether the lungs are inflamed or not.

It is not difficult to conceive that a secretion into the bronchiæ may take place capable of impeding or even interrupting the office of the lungs where there is no inflammation. But how shall we distinguish such cases from those in which the same copious secretion and dyspnœa proceed from inflammation? Dr. Cullen, indeed, and some others, maintain, that a degree of inflammation constantly attends this complaint; while others run into the opposite opinion, and deny that it ever is of an inflammatory nature. The truth seems to be, that where the peripneumonia notha is exquisitely formed, if there is any inflammation it is of a very languid kind; but in proportion as the symptoms approach to those of pneumonia, the inflammatory affection of the lungs becomes more apparent; and a want of attention to distinguish these cases seems to have given rise to the opposite opinions respecting the nature of the complaint.

The chief difference between the true pneumonia and the peripneumonia notha arises,

arises, perhaps, from the greater laxity of fibre in those who are subject to the latter complaint, in consequence of which the effusion which takes place is so copious as either wholly to remove the incipient inflammation or to prevent it becoming considerable. If such be the case it would appear, from what was said in the Introduction to the Second Part respecting the nature of the profluvia, that the peripneumonia notha belongs to this class of diseases, rather than to the phlegmasiæ.

It is an opinion of Boerhaave and his commentator Van Swieten, that peripneumonia notha is the effect of, and immediate cause of death in, almost all diseases which terminate fatally. By which we are to understand nothing more than that these authors apply the term to a certain train of symptoms which in most cases precede death; a term certainly very ill chosen for this purpose, since they employ it at the same time as the name of a disease. We might as well say that all diseases terminating fatally occasion syncope, because the motion of the heart is enfeebled previous to death.

SECT. III.

Of the Treatment of Peripneumonia Notha.

THE treatment of this complaint varies in different cases according as the symptoms approach more or less to those of the true pneumonia. When the inflammatory symptoms in the peripneumonia notha are considerable, the treatment in the two complaints differs only in degree.

From the tendency to effusion, however, in all cases of this complaint, and the peculiar habit of body in which it appears, blood-letting must be employed with much caution. It is sometimes proper, indeed, to begin with a moderate blood-letting, but after the inflammatory symptoms have to a certain degree yielded, it is advisable to attempt the cure by an attention to diet, proper expectorants, and local evacuations alone. There are few complaints, indeed, in the treatment of which more caution is required, the inflammatory symptoms often urging the necessity of one set of remedies, while the tendency to effusion points out another

another of very opposite effects. All that can be done in such cases is to study with care the nature of the symptoms and the habit of body, and obviate that tendency which seems more immediately to threaten danger, but at the same time in such a way as shall as little as possible increase the opposite train of symptoms.

The tendency to inflammation is to be obviated with as little loss of strength as the nature of the case admits of; and that to debility, by means which tend as little as possible to increase inflammation. After all that can be said, therefore, much must depend on the discernment of the practitioner.

Although Boerhaave, in laying down the treatment in this complaint recommends blood-letting, yet he afterwards dissuades from the employment of this remedy, as even while it brings immediate relief, it eventually increases the complaint; and Sydenham, who in most cases made so liberal a use of the lancet, acknowledges the bad effects of the repetition of blood-letting in peripneumonia notha.

Catharsis

Catharsis seems to be a safer evacuation in peripneumonia notha than blood-letting.

Dr. Cullen thinks the little advantage derived from, or rather, the injury done by, cathartics, in the true pneumonia, is a strong argument against their use in the complaint before us. Sydenham, on the other hand, assures us that, contrary to what happens in the true pneumonia, the free employment of cathartics is useful in peripneumonia notha. The result of general experience, however, seems to be, that mild cathartics, not too frequently repeated, and clysters only, are proper in this disease; for, although it is of great consequence to prevent irritating matter being lodged in the alimentary canal, much evacuation is found hurtful.*

Reasoning from the effects of medicines in the true pneumonia, we should be led to very erroneous conclusions respecting the propriety of emetics in this complaint. In peripneumonia notha, says Lieutaud, especially if it be accompanied with nausea, an

* Eller particularly recommends the use of emollient and gently stimulating clysters in this complaint. De Cog. et Cur. Morb.

emetic

emetic often brings immediate relief. "Full "vomiting," Dr. Cullen observes, "may "often be repeated, and nauseating doses "ought to be constantly employed." The benefit derived from emetics and nauseating doses seems chiefly to consist in their increasing the expectoration, on the state of which, we have seen, the event of the disease so much depends. Nor is their tendency to promote sweat, which, if general and not profuse, nor brought out by heating measures, is for the most part favourable, to be overlooked. The other expectorants employed in this complaint do not differ from those recommended in the true pneumonia.

The employment of opiates, however, is not always safe in the peripneumonia notha; they act, we have seen, by interrupting for a time the efforts to expectorate, which, when the fluid poured into the lungs is copious and the strength much reduced, is attended with danger.

Little is to be expected from the medicines termed pectoralia, which were by some much recommended in peripneumonia notha,

tha, ground ivy, hyssop, &c. Nor is much more to be expected from the use of diuretics. They are recommended by Lieutaud and other writers of authority, and as many of them are innocent, it may not be wholly useless, perhaps, especially where the quantity of phlegm oppressing the lungs is very great, to make a trial of them.

With regard to the means of obviating debility, wine is found to increase the inflammatory tendency much less than any of the preparations of the bark, and it is often the more necessary in this complaint, as the subjects of peripneumonia notha are frequently such as have long been accustomed to the use of fermented liquors; and, as Sydenham has justly observed, the sudden abstraction of the habitual stimulus is often attended with the worst consequences.

These observations, however, apply only to the cases which partake least of the nature of pneumonia. When the tendency to inflammation is apparent a stricter attention to the anti-inflammatory regimen is necessary. Irritating articles of food and such as

are of difficult digestion are improper in all cases of peripneumonia notha, and in these animal food of every kind is to be avoided till the inflammatory symptoms have abated. In such cases, as the fever runs higher and the disease is more rapid, the change of diet is less felt than it would be in the mere chronic cases.

Such are the general means employed in peripneumonia notha. The local remedies hold a higher place in the treatment of this complaint than in that of pneumonia.

As we dread the effects of general, we endeavour to supply their place by a more assiduous use of local, remedies. The chief of these still are local blood-letting and blisters. The former is employed where the disease approaches to the nature of pneumonia, the latter is useful in all cases, but, as in pneumonia, blisters should be confined to the thorax. Blistering the legs, as recommended by Eller and others, appears to be of little service. Fomentations of the chest are still less useful here than in pneumonia.

From

From the foregoing observations the reader will readily perceive the circumstances in which the treatment of peripneumonia notha differs from that of the true pneumonia.

CHAP. XII.

Of Carditis and Pericarditis.

ENOUGH has already been said of carditis and pericarditis to convince the reader that any particular consideration of these complaints is unnecessary. There is no symptom, we have seen, which can be depended on as forming a diagnosis between them and inflammation of the lungs. Were we possessed of such a diagnosis it would prove of little use, since the treatment when the heart, pericardium, or lungs, is inflamed is the same.

It is remarkable, indeed, that inflammation of the heart and pericardium has existed without betraying itself by any symptom; for abscesses and ulcerations of these parts have been found after death where none of the

symptoms of inflammation had been observed. Of the treatment in such cases nothing can be said, since they are only known by their consequences, which are uniformly fatal.

How it happens that inflammation sometimes exists in these parts, unaccompanied by any of its usual symptoms, it is impossible to say. We shall find similar instances in some of the other phlegmasiæ, and these too where the inflammation attacks organs of much greater sensibility than the heart and pericardium.

We have now considered all the phlegmasiæ in which the inflammation is seated in the head, neck, and thoracic viscera; and are now to consider those in which the inflammation attacks the abdominal viscera. The inflammation sometimes seizes on the whole of the peritoneum; the phlegmasia is then termed peritonitis.

It is defined by Dr. Cullen,

Fever, with pain of the abdomen, increased by the erect posture, and unaccompanied by the symptoms peculiar to the other abdominal phlegmasiæ.

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The peritonitis, however, seldom exists without the inflammation spreading in a greater or less degree to the stomach and intestines, nor does inflammation of the latter frequently exist without extending to the peritoneum. There is hardly room, therefore, for regarding the peritonitis as a distinct complaint. When it does appear alone, it may easily be known by comparing the symptoms just enumerated with what is about to be said of those of the other abdominal phlegmasiæ, and the mode of treatment is the same as in inflammation of the stomach and intestines.

CHAP. XIII.

Of Gastritis.

INFLAMMATION of the stomach is defined by Dr. Cullen,

A typhus fever, with heat and pain in the epigastrium, increased by any kind of ingesta, with a constant inclination to vomit, (whatever is received into the stomach being immediately rejected) and hiccup.

The first part of this definition is objectionable. The fever in gastritis bearing no resemblance to typhus, except in the general debility which attends it, for even the pulse, if we except its feebleness, is very different from that in typhus, and as for the more marked symptoms of typhus they never shew themselves in this complaint. This objection, it is evident, is obviated by the change above proposed in the definitions of the phlegmasiæ.*

Dr. Cullen divides gastritis into two varieties, the gastritis phlegmonadea and gastritis erythematica. Of this division I shall presently have occasion to speak more particularly.

SECT. I.

Of the Symptoms of Gastritis.

THE symptoms of gastritis, like those of most other phlegmasiæ, are far from being complicated, the definition just given comprehending the chief part of them. The

* General Introduction, vol. 1.

pain

pain of the stomach is generally very severe and accompanied with a sense of burning heat. It is not always confined exactly to the region of the stomach, but extends as low as the false ribs, and often shoots to the back. It is not only much increased by any thing received into the stomach, but even by the slightest external pressure. The inclination to vomit and the hiccup are very constant attendants.

The pulse is frequent, small, contracted, more or less hard, and sometimes intermitting. Burserius observes, that the pulse is sometimes rather strong; this, however, is comparatively rare. The thirst is urgent, and it forms an exception to what has just been said respecting ingesta, that on receiving a mild fluid into the stomach the pain seems for a few moments to abate. In a very short time, however, the fluid is rejected, and the patient soon finds that any relief obtained by drinking more is deceitful and transitory.

In gastritis there is a more sudden and general depression of strength than in any other of the phlegmasiæ. It generally goes

so far as to threaten syncope, which in many cases actually happens. The anxiety and anguish referred to the precordia are very great and sometimes among the most distressing symptoms.

The bowels are costive; there is seldom, however, much difficulty in moving them, unless the inflammation has spread to them.

There is no complaint with which, by a person acquainted with its symptoms, gastritis can be confounded. In cramps and flatulent pains of the stomach the pulse is generally natural or nearly so, nor are the latter accompanied with the sudden sinking of the strength which attends gastritis. In these there is often novomiting, and it is very rarely so constant, or so constantly excited by the ingesta. The increase of pain on receiving any thing into the stomach is much less remarkable in flatulent pains and cramps than in gastritis, and in the former the great increase of pain on pressure, one of the best diagnostics of gastritis, is not observed. The hiccup too, which is a more constant attendant on the latter complaint, assists here in distinguishing it.

Besides,

Besides, in spasm of the stomach, the case most frequently confounded with gastritis, there is such a sense of contraction and suffocation that the voice is often suppressed, while in gastritis it is more free and the cries of the patient are often piercing.

According to Sauvages, (and Quarin seems to agree with him) it is almost impossible to distinguish gastritis from an inflammation of the epigastric muscles, in which, it is said, all the symptoms of the former are present in a less degree. By a little attention, however, the cases may be readily distinguished. The pain, as in gastritis, indeed, is increased on pressure; but it is also increased, and in a greater degree, by motion, that is, by those motions in which the epigastric muscles are concerned, which is not the case in gastritis. The state of the pulse in the former case also is very different. If affected at all, instead of being small and feeble as in gastritis, it is strong as in most other phlegmasiæ. Besides, there is little or no tendency to vomiting in this case, and some degree of swelling of the muscles may frequently be observed;

this

this symptom, however, is not constant and there is often some degree of fulness about the stomach in gastritis.

Quarin observes, of the inflammation of the epigastric muscles, that a diagnosis between it and gastritis is of little consequence, since the practice in them is the same. This remark, however, is far from being well founded. The greater importance of the organ affected in gastritis renders the most powerful means necessary. In the other we trust more to local means, its treatment resembling that of the false pleurisy. They are complaints of precisely the same nature.

Such are the usual symptoms of gastritis, and the means of distinguishing it from the complaints which most resemble it; and when it appears with these symptoms there are few complaints whose diagnosis is more easy. This, however, is not universally the case; there are instances on record in which it appeared on dissection that the stomach had been inflamed where many, and indeed almost all, the foregoing symptoms were absent. De Haen, in his Ratio Medendi, relates

relates several cases of this kind; in one there was no vomiting, and the patient retained his appetite to the last; in another, not only the vomiting but the pain itself was absent; such cases, however, are not to be looked for.

I have already observed, that Dr. Cullen divides gastritis into two species, the phlegmonic and erythematic. He is far, however, from defining accurately these terms, or pointing out the means by which his two species may be distinguished. He seems to suppose that two kinds of inflammation, analogous to the pustule and erythema of the skin, may exist in the stomach. The one superficial, the other deep-seated. This supposition, we have reason to believe, is well founded, although a more accurate knowledge of the complaint than we possess is necessary for distinguishing the two species. It is the gastritis erythematica, which Dr. Cullen thinks is often present without the symptoms which characterise gastritis. Erythematic inflammations of the stomach, he observes, are more frequent than the phlegmonic. Wherever this inflammation

flammation affects the mouth and fauces, and there is at the same time in the stomach an unusual sensibility to acrid substances, with frequent vomiting, there can be little doubt, he thinks, that the inflammation has spread to the stomach. And these symptoms, with loss of appetite, thirst, and a frequent pulse, even where there is no affection of the mouth and fauces, often indicate an erythematic inflammation of the stomach, which after such symptoms frequently shews itself in the fauces.

But even where the inflammation is of the erythematic kind, the symptoms are often such as Dr. Cullen supposes to characterise the phlegmonic inflammation of the stomach; for I have seen the erythema spread from the mouth to the stomach, and there occasion all the usual symptoms of phlegmonic gastritis. They were, however, I think, less violent; but it is evident that a greater or less degree of the same symptoms cannot serve the purposes of a diagnosis.

The erythematic inflammation in internal parts, as well as on the surface, shews a tendency to spread, leaving those which it

first

first occupied, when it affects neigbouring parts, and in this way it often extends along the whole alimentary canal. In the intestines, contrary to the effects of phlegmonic inflammation, it occasions diarrhœa, and the vomiting frequently ceases as the diarrhœa comes on.

We sometimes meet with other symptoms in gastritis besides those which have been enumerated. These, however, are less frequent. The most common of them is dyspnœa. The patient often complains of a difficulty of breathing, which does not arise from the inflammation having spread to the lungs, (when this happens the other symptoms of pneumonia as well as the dyspnœa attend) but from the inflammatory state of the stomach rendering the descent of the diaphragm painful. It is evident the degree of dyspnœa attending gastritis must in a great measure depend on the part of the stomach which the inflammation occupies. The nearer the seat of the complaint is to the diaphragm, the more, it is evident, will the descent of the latter be affected by it.

Another symptom, less readily accounted for,

for, which now and then appears in gastritis, is the hydrophobia. The reader will find a case of gastritis attended by this symptom in the first volume of the Medical Essays. He may also consult Van Swieten's Commentary on the 1130th and 1139th Aphorisms of Boerhaave. Hydrophobia, indeed, occasionally supervenes in various acute diseases.

Resolution, a tendency to which, in this as in other cases of phlegmasia, is known by the general mildness of the symptoms, and particularly by their yielding to the proper remedies, is the only favourable termination of gastritis. When the symptoms run high, and suffer little or no remission on the use of blood-letting, and other means for moderating inflammation, we have reason to dread an unfavourable termination.

A tendency to suppuration, which is a rare termination of gastritis, is known by the symptoms continuing without any considerable remission, and at the same time with no great degree of violence for one or two weeks or longer. When an abscess is formed

formed there is a considerable remission of the pain, generally preceded by rigours. But a sense of weight about the precordia and much anxiety harrass the patient, a change of symptoms analogous to that above described indicating suppuration in pneumonia. The febrile symptoms which attend all internal suppurations are the same. They are at first more moderate than those which accompany the inflammatory stage of the complaint; in a short time, however, they begin to suffer regular exacerbations, and by degrees assume the form of hectic fever, of which I shall soon have occasion to speak at greater length.

The danger of an abscess in the stomach is evident. It generally proves fatal unless it open into the stomach, in which case the pus is discharged by vomiting and stool, and the ulcer sometimes heals. In the Memoirs of the Academy at Paris, for the year 1704, the reader will find a case, in which, although the abscess burst into the stomach, the patient died in consequence of the ulcer left by it. Eller relates a similar case in his Obs. de Cog. et Cur. Morb. in which the

the patient lived several years after the formation of the ulcer. Such cases sometimes terminate suddenly by the ulcer causing a fatal hemorrhagy. There are instances on record in which the inflammation having caused an adhesion between the stomach and parietes of the abdomen, the abscess broke externally. Van Swieten mentions more than one case of this kind. One from the Journal des Sçavans, in which the contents of the stomach were discharged through the opening, so that it was necessary to keep it closed by compresses and bandages. The patient lived under these circumstances for no less a time than twenty-three years, and enjoyed so good a state of health that she was able to undergo considerable labour in gaining a livelihood. When the abscess, as frequently happens, bursts into the cavity of the abdomen, it occasions purulent escites, which always proves fatal.

The tendency to gangrene in this complaint, as in other internal inflammations, is known by the unusual violence of the symptoms, and by their not yielding to the proper

proper remedies. It is almost unnecessary to observe, that in gastritis gangrene always proves fatal in a very short time. When gangrene actually takes place its presence is known by the remission of the pain, the pulse at the same time becoming more frequent and feeble, and the anxiety and debility increasing, with cold, clammy, and partial sweats. I have already had occasion to observe, that in visceral inflammations, where the gangrene occupies but a small part of that which is inflamed, the pain, as I have myself witnessed, often continues to the last. In these circumstances it is more difficult to ascertain its presence. This may generally be done, however, by an attention to the other symptoms.

Boerhaave ranks schirrus and cancer of the stomach among the terminations of gastritis. But the generality of writers agree that these are rarely, if ever, the consequence of inflammation.

Besides the terminations which gastritis has in common with the other phlegmasiæ, it seems sometimes to prove fatal merely in consequence of the extreme irritation of the

the system which it occasions. "From the "sensibility of the stomach, and its communication with the rest of the system," Dr. Cullen observes, "it would seem that "the inflammation of this organ, by whatever causes produced, may be attended "with fatal consequences; in particular, by "the great debility which such inflammation suddenly produces, it may quickly "prove fatal without running the common "course of inflammations." And Boerhaave, in his 953d Aphorism, after enumerating other terminations of gastritis, observes, that it sometimes induces sudden death with convulsions, before any of these terminations can take place.

General convulsions are mentioned by many as a frequent symptom of gastritis; and that they sometimes proceed from the presence of inflammation in so sensible a part cannot be doubted; for this we have the authority of Quarin, Burserius, and others; but in by far the majority of cases in which they supervene, the disease has arisen from poisons received into the stomach, and the convulsions are more frequently

quently the consequence of these being taken into the mass of blood, than of the gastritis, which they occasion. The combination of gastritis and worms in children may also have contributed to strengthen the opinion of convulsions being a symptom of the former complaint.

SECT. II.

Of the Causes of Gastritis.

THE state of body which predisposes to gastritis is the same as that which predisposes to other inflammatory complaints. I have already had occasion to remark, that, independently of plethora, which certainly disposes to the phlegmasiæ, there is a habit peculiarly subject to them. "Those," Dr. Millar remarks, "of a thin make, rigid "fibres, and a quick digestion, are liable to "inflammatory diseases." It is unnecessary to repeat the remarks which have been made above respecting the mode of life which predisposes to inflammation.

Among the occasional causes of gastritis, as of the other phlegmasiæ, cold applied in

various ways holds a principal place. Most of the exciting causes of gastritis, however, are local irritations applied to the stomach. There is no cause of this disease so common as the receiving cold liquors into the stomach in considerable quantity when the body is heated. Acrid matters received into the stomach, especially when its mucus has been abraded or so changed as not properly to perform its office, may excite gastritis. It is to be recollected that the substances most acrid to the taste are not those which occasion most irritation in the stomach. The strongest spices are often received into the stomach without inconvenience, while, on the other hand, the most insipid matters frequently affect it most powerfully. All substances, however, which strongly affect the taste, to a certain degree irritate the stomach, and if used very freely by those who are strongly predisposed to gastritis, particularly such as have lately laboured under this complaint, they may excite it. It is almost unnecessary to observe, that all cathartics, as well as emetics, possess a peculiar power of irritating the stomach.

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There are few cathartics which, if given in very large doses, do not prove emetic. It is not surprising, therefore, that we find the use of drastic emetics and cathartics ranked amongst the causes of gastritis. To the same division of its causes belong also a numerous class of poisons, a large proportion of which seem to act chiefly by exciting inflammation and ulceration in the stomach. There are certain articles of diet which occasion more irritation during digestion than others. Animal food occasions more than vegetable, and the flesh of old animals more than that of young. The tendency of irritating and intoxicating liquors to excite gastritis is generally admitted. The liberal use of fermented liquors often excites it in those who are least predisposed, and a very small quantity is sufficient to occasion a relapse. Gastritis may arise from acrid matter generated within the body, as frequently happens in various ulcerous affections of the fauces and œsophagus. Dr. Cullen thinks, that gastritis occasioned by the application of acrid substances is generally of the erythematic kind.

There are few things which apply a stronger irritation to the stomach than over-distension. When food is received into it in usual quantity, and at the same time happens to be of difficult digestion, so that the distension is kept up for a considerable length of time, gastritis may be the consequence. The reader will find some good observations on this cause of gastritis, and cases illustrating them, in Eller's Treatise de Cog. et Cur. Morb.

A blow in the region of the stomach, or wounds in the stomach or neighbouring parts, the pressure of the ensiform cartilage when a luxation of it takes place or it is broken, so that it presses on the stomach, excite this disease.

Like the other phlegmasiæ, it may be excited by the various causes of sudden plethora, particularly the suppression of hemorrhagies or other habitual evacuations.

It is not uncommon for the inflammation of some neighbouring parts to spread to the stomach, particularly that of the œsophagus and duodenum.

Such are the chief occasional causes of gastritis. There are some others whose

operation

operation seems wholly involved in obscurity. I have more than once had occasion to observe, that certain pestilential fevers are very generally accompanied with inflammation of the stomach and bowels, and so frequent is this combination, that Van Swieten and others have supposed that the contagion often makes its first attack on the stomach, occasioning an inflammation of this organ. This supposition, however, is far from satisfactory, since the inflammation frequently does not shew itself till after the fever has lasted for many days. Besides, it is not uncommon for gastritis to supervene on fevers which we have every reason to believe did not arise from contagion.

Gastritis supervenes in eruptive as well as simple, and in intermitting as well as continued, fevers. In the eruptive fevers it is most apt to supervene on the sudden disappearance of the eruption;* and in such cases, probably from the great debility which attends them, it generally runs very speedily to gangrene.†

* Dr. M'Bride's Practice of Medicine.

† See what was said of the retrocession of eruptions, in the 2d vol.

Among the complaints which are apt to give rise to gastritis, is generally mentioned the gout. When we come to consider this complaint, however, we shall find reason to believe that it rarely, if ever, excites visceral inflammation.

SECT. III.

Of the Treatment of Gastritis.

THE treatment of gastritis is so similar to that of several complaints we have been considering, that it will not be necessary to speak of it at great length. There are some circumstances peculiar to gastritis which deserves attention.

In this, as in the other phlegmasiæ, blood-letting is the remedy on which we depend, and there is no case in which it is carried to greater extent than in gastritis. We even read of cases in which it was employed four or five times a day for several days together. As soon as the symptoms of gastritis shew themselves we have recourse to this remedy, and if they do not yield it must be carried as far as the habit will

will bear. And so far from only letting blood when the pulse is full and strong, the smaller and weaker it is, with certain exceptions I am about to point out, copious and early blood-letting becomes the more necessary. And as in the cases in which we have hitherto found blood-letting necessary, we employ it with a view to diminish the strength of the pulse, in this instance it is recommended in order to increase its strength, and however singular it may seem, it uniformly has this effect, at least when it is about to prove serviceable. The feebleness of the circulation in gastritis increases the danger of delaying blood-letting, for it sometimes happens, even in the space of a few hours, that the circulation becomes so languid, as I have myself seen, that it is impossible to procure a flow of blood from any vein in the body.

In some rare cases it happens, as was observed above, that the pulse in gastritis is strong; in these the usual effects of blood-letting are to be expected.

However valuable a remedy blood-letting is in most cases of gastritis, there are some

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in which its propriety is questionable. When the strength has been much exhausted before the attack of the disease, as when this disease supervenes in the worst forms of typhus, blood-letting seems often to hasten death, although instances are not wanting in which, even under these circumstances, it has proved useful, but the peculiar circumstances under which it ought to be employed in such cases have not been ascertained. Of this, however, there can be no doubt, that it should not be employed in any case of this kind till after less debilitating means have failed.

We are also dissuaded from general blood-letting in gastritis when its continuance has occasioned symptoms of great debility. We must abstain from blood-letting when the pulse has become unequal, or when convulsions, syncope, and sonorous deglutition have supervened. These symptoms are rare, at least before a very late period of the disease.

Nothing affords a better prognosis in gastritis than the remission of the symptoms on the employment of blood-letting. But we

we must not mistake such a remission for a removal of the complaint. In a large proportion of cases, after the first blood-letting, an exacerbation sooner or later takes place, demanding a repetition of the same remedy.

The repetition of the blood-letting is regulated in the same manner as in the other phlegmasiæ. The less remission the symptoms suffer after the first blood-letting, the sooner, and to the greater extent, it must be repeated. With regard to the evacuation by the bowels, the very irritable state of the stomach prevents our giving medicines by the mouth, which in most cases of this complaint serve only to increase the vomiting, and consequently the disease. The general rule, therefore, is to give no cathartic by the mouth; to which, however, there are exceptions. Gastritis, it has been observed, is sometimes induced by over distension of the stomach. Nothing tends more than this to debilitate muscular action. If the urine, for example, be retained till the quantity accumulated has greatly distended the bladder, it has no longer power to expel it. The same happens to the stomach,

mach, when it is over distended it loses its power to expel its contents by vomiting, for although the stomach is assisted in vomiting by the abdominal muscles and diaphragm, yet it would appear that the action of the muscular fibres of the stomach itself are necessary in this operation. Hence it is, that in gastritis occasioned by over distension, the patient is often tormented by ineffectual efforts to vomit. Little is to be expected, it is plain, from any remedy while the cause which produces the disease still remains applied. In such cases, therefore, at the same time that we employ the usual remedies of gastritis, it is necessary to have recourse to some means, in part at least to expel the contents of the stomach. Glisters tend certainly to this effect, but not very powerfully. Emetics and cathartics taken by the mouth are the only effectual means, both of which are inadmissible in ordinary cases. Nothing, it is evident, can occasion more irritation of the stomach than an emetic, when it is so loaded that the ordinary efforts of vomiting cannot expel its contents. The only effectual way of

of relieving the stomach which remains is, by the exhibition of cathartics by the mouth, which have often under such circumstances proved eminently serviceable, by promoting the passage of the offending matter through the pylorus.*

While cathartics are employed for this purpose, the intestines, at the same time, should be excited by glisters. By these means part of the contents of the stomach will pass into the intestines, and the unusual load being thus lessened, its remaining contents will be rejected by vomiting.

Another instance in which medicine must be given by the mouth in this complaint is, in the case of acrid or poisonous substances having been received into the stomach. It it necessary in these cases to promote the vomiting by the use of mild mucilaginous and oily fluids, till there is reason to believe that the offending cause is removed. While these promote vomiting, they defend the stomach against the irritation of its contents.

* See the observations of Eller on this complaint, in his Treatise de Cog. et Cur. Morb.

tents. Cathartics are particularly indicated if the poison has been long enough in the body to give reason to believe that it is passed into the intestines. They should be given in small compass, and in the form of pills, that they may, if possible, be retained. In these circumstances it is evident, that the frequent repetition of cathartic clysters is proper: While they expel the contents of the lower bowels, they increase the peristaltic motion of the whole alimentary canal. If we are acquainted with any substance which corrects the noxious quality of the poison, immediate recourse must be had to it. On this part of the subject I had occasion to make some observations in the first volume, in speaking of arsenic as a remedy in intermitting fever, to which I refer. With these exceptions, no medicine should be given by the mouth in gastritis. In ordinary cases we promote the evacuation by the intestines by clysters alone.

Even where diarrhœa attends, mild mucilaginous and oily clysters are serviceable, both by promoting the evacuation of any irritating matter which the intestines may contain,

contain, and in consequence of allaying irritation, by tending to lessen the diarrhœa when it threatens to become profuse.

The urgent thirst, and duration of the disease, for gastritis when it suffers remissions sometimes lasts for several weeks, render an attention to diet necessary. The patient ought not to be tormented by constant thirst, but at the same time he must be restricted both in the quantity and quality of what he drinks. The mildest fluids must be chosen, and given frequently and in small quantity, so that they may as little as possible increase the vomiting, which with all the care that can be taken they seldom fail to do.*

The food must be regulated on the same principle. For the first days, indeed, a total abstinence from food is best; but when the disease continues longer, it is necessary to support the strength by small quantities of the mildest kinds. Any solid food ir-

* Many recommend the addition of acids and nitre to the drink: These, particularly the latter, are serviceable in most cases of phlegmasiæ, but in gastritis nitre would increase the vomiting.

ritates

ritates too much. The mild and mucilaginous decoctions are the best.

We are cautioned against endeavouring to stop the vomiting in gastritis by any preparation of opium. The impropriety of giving opium at the commencement is apparent. In the advanced stages however, after the force of the disease has been broken by proper evacuations, anodyne clysters cautiously employed sometimes allay the vomiting, and tend to shorten the disease.

It seems to have been overlooked by many writers, that the bad effects of opium in the phlegmasiæ proceed not from any local action of the opium on the inflamed part, but from its increasing the vis a tergo. When this has been sufficiently reduced, and there is consequently little or no hardness remaining in the pulse, opium is often employed, for the purpose of allaying pain and irritation, with great advantage.

The temperature of the patient's chamber, as in the other phlegmasiæ, should be as uniform as possible, and rather cool than otherwise.

Such are the general remedies employed in

in gastritis. When it supervenes on the retrocession of eruptions, some other means are necessary. These I have already had occasion to point out in treating of the exanthemata. It remains to make some observations on the local means employed in gastritis.

Local blood-letting is seldom recommended in this complaint, altho' the same good effects are to be expected from it as in the other phlegmasiæ. It is peculiarly well adapted to those cases in which general blood-letting to any extent is inadmissible, or at least an ambiguous practice.

Blistering is more generally recommended, and ought never to be omitted after the hardness of the pulse is reduced by blood-letting.

Fomentations are more frequently employed in abdominal inflammations, than in those of the thoracic viscera. The constant motion of the body, however, which often renders it very difficult to retain even blisters in their proper place, generally renders the fomentation of the abdomen extremely troublesome. Besides, this remedy is apt to in-

crease the anxiety, one of the most distressing symptoms of gastritis; so that upon the whole it often does more harm than good.

When the symptoms of suppuration make their appearance, medicines can be of little further use; and if the patient is saved, it is more by the accidental seat of the abscess than by any thing that the physician can do. If the abscess bursts into the stomach, irritating articles of diet should be avoided till the ulcer is healed. When the bursting of the abscess forms an external ulcer, the treatment must be left to the surgeon. In this case, indeed, little is to be done besides employing the means necessary to prevent the contents of the stomach from being discharged by the wound.

When the matter is discharged into the cavity of the abdomen, there are no means of relief. The same observation applies to gangrene of the stomach, so that when its symptoms supervene, we desist from the use of medicine.

It has been observed, that gastritis sometimes assumes a remitting form; in these

cases the Peruvian bark has been recommended. It has not, however, been ascertained with accuracy in what cases it is proper.

Dr. Cullen takes no notice of the inflammation of the spleen, pancreas, or omentum, either in his System of Nosology, or his First Lines. From the situation and office of these parts, it is impossible for us to distinguish inflammation of them from that of neighbouring parts. The functions are so obscure, that any læsion of them produces no sensible effect. The spleen has even been cut out in brutes, or the vessels going to and coming from it secured by ligature, without materially affecting the health of the animal.* And there are many cases on record, where parts of the omentum have been lost in consequence of wounds, and the patient has afterwards enjoyed good health. Nay the omentum has been found almost wholly wanting in people who died suddenly at a time when they appeared in perfect health.† Hence it often

* See Malpig. de Liene, Brunner de Pancreate.

† See the Anatomical Works of Ruysch.

happens,

happens, that inflammation of the spleen, pancreas, or omentum, are mistaken for inflammation of neighbouring parts. Thus Van Swieten relates a case, sent him by De Haen, in which inflammation of the spleen was mistaken for pleurisy. Inflammation of the pancreas is often mistaken for gastritis; and inflammation of the omentum may be confounded with enteritis. It seldom happens that any of these parts are affected with inflammation without some of the neighbouring parts partaking of it, which adds greatly to the difficulty with which we detect the chief seat of the complaint. It fortunately happens, however, that an accurate diagnosis in such cases is of no consequence; the mode of practice being the same in inflammation of the spleen and of the lungs, in that of the pancreas and stomach, and in that of the omentum and intestines. All that is necessary is, to suit the practice to the severity of the symptoms.

The phlegmasiæ which next demands attention then is the Enteritis, or Inflammation of the Intestines. On this complaint, so

so similar in its symptoms and mode of treatment to gastritis, a few observations will be sufficient.

CHAP. XIV.

Of Enteritis.

ENTERITIS is defined by Dr. Cullen,

A typhous fever with a pungent pain of the abdomen, accompanied with a sense of twisting about the umbilicus, vomiting, and obstinate costiveness.

He divides this complaint in the same manner as gastritis, into the enteritis phlegmonodæa, and enteritis erythematica.

The former he defines, interitis with acute pain, violent fever, vomiting, and costiveness.

The latter, enteritis in which the pain and fever are less violent, accompanied by diarrhœa, without vomiting. This form of the disease is with little propriety arranged under the general definition of enteritis, of which vomiting and costiveness form a part. It is far from being certain, however, that

the erythematic entiritis always assumes this form. Although there can be little doubt of an entiritis, as well as gastritis erythematica, really existing, yet in the present state of our knowledge we cannot with much accuracy distinguish them. "Although I "have mentioned these species," Dr. Cullen observes, "it must be confessed, that the "symptoms of erythematic gastritis, and "still more those of erythematic enteritis, "are very uncertain and obscure. I wished, "however, to propose this division, that "future practitioners may enquire into the "propriety of it with more diligence." The first part of the definition of enteritis, typhous fever, is objectionable for the same reason that it was objected to in the definition of gastritis.

SECT. I.

Of the Symptoms of Enteritis.

IN enteritis the patient complains of an acute burning pain in the abdomen, sometimes confined to a particular part, at other times felt more generally, and particularly about

about the umbilicus. Although it does not intermit, it becomes more severe at intervals, which has, with much probability, been attributed to the contents of the intestines now and then passing over the inflamed part. It is one of the best diagnostics of the pain attending enteritis, that it is greatly increased on pressure. Other pains of the abdomen are, to a certain degree, increased on pressure, but none so remarkably as that which accompanies the inflammation of the stomach, bowels, and peritoneum.

As enteritis advances, the abdomen becomes more or less tumid; and in by far the majority of cases obstinate costiveness attends throughout the disease. We have seen diarrhœa enumerated among the symptoms of erythematic enteritis, in which all the symptoms are more mild than in the phlégmonic. Even in the best formed cases of enteritis a thin matter is sometimes past by stool. There is frequently present a considerable degree of nausea, and in many cases the patient is harrassed with vomiting. The inverted motion of the stomach is sometimes communicated to the intestines, and extends so far

along their course that feculent matter is rejected by vomiting.

These symptoms are accompanied with a considerable degree of fever. The pulse is frequent, small, and hard, as in gastritis. Some writers assert, that the pulse is sometimes full in this complaint as well as in gastritis. It is certainly very rarely so either in the one or the other. The pulse is never so frequent either in this complaint or in gastritis, as it frequently is in typhus. It seldom much exceeds a hundred. I have seen a case of gastritis and enteritis combined, so violent that it terminated fatally in about twenty-four hours, in which the pulse at the height of the disease did not exceed ninety-two.

The heat is considerable, the thirst urgent, and urine high coloured.

The remarkable depression of strength observed in gastritis, also attends enteritis, but in general it is neither so sudden nor excessive.

It is not always very easy to distinguish enteritis from other visceral inflammations; and as in this, as in similar cases, the inflammation

flammation often spreads to neighbouring parts, it is frequently impossible to ascertain its chief seat. When the upper part of the colon is the part affected, the symptoms often resemble those of pleurisy or hepatitis. When it is confined to the rectum, it produces tenesmus, constriction of the anus, and other symptoms of piles, for which it is frequently mistaken. Even in this case, however, the difficulty of the diagnosis will seldom lead to any material error in practice, for when piles are attended with considerable pain and fever, we must have recourse to the measures which obviate inflammation. In such cases, indeed, piles are always attended with more or less inflammation of the rectum.

We judge of the tendency of this complaint by the degree of the symptoms, and the effects of the means employed. But there are also some other circumstances which demand attention in collecting the prognosis. It is more dangerous when it occupies the small than the large intestines; and upon the whole, the nearer its seat approaches to the stomach, the greater is the

danger. There is some difficulty in ascertaining what part of the intestine is inflamed. This is to be attempted by attending to the seat and degree of the pain, the degree of nausea and vomiting, and the sinking of the strength; for all these symptoms are more violent when the disease is seated in the small than in the large intestines, and in proportion as the seat of the complaint is nearer the stomach. When the inflammation is in the rectum, we are further assisted in determining its seat by the pain and constriction of the anus. When the inflammation is seated in other parts of the large intestines, we may readily be deceived, for, from the vicinity of the stomach, the nausea and vomiting are often considerable if it occupies the higher parts of the colon. We shall not err, however, in the treatment of the disease, if, without endeavouring to ascertain its precise seat, we proportion the vigour of the means employed to the violence of the symptoms.*

* See the 22d section of the 43d Epistle of Morgagni de Causis et Sedibus Morborum.

I have already had occasion to observe, that the symptoms are milder in the cases attended with diarrhœa, than where there is obstinate costiveness. In the former case consequently the prognosis is better. As in other visceral inflammations, the prognosis depends as much on the habit of the patient as on the degree of the disease. From the nature of the means which relieve such complaints, the danger is always great when they supervene on debilitated states of the body. When entritis supervenes on the worst forms of typhus, which it is apt to do, it generally proves fatal. This complaint is particularly dangerous, Quarin observes, in pregnant women, from the probability there is that it may occasion abortion; besides the constipation, vomiting, and all the other symptoms, are generally very violent in them, and the danger is increased by the abdominal viscera being compressed by the distended uterus.

Resolution may be regarded as the only favourable termination of enteritis. It is frequently preceded by a moderate diarrhœa, the most favourable symptom in this disease.

When

When the rectum is the seat of the inflammation, it is often relieved, or wholly removed, by the hæmorrhois.

The tendency to suppuration and gangrene in this complaint, is known by the same symptoms as in gastritis. Suppuration is even a more rare termination of inflammation of the bowels, than of that of the stomach. When the symptoms, however, have continued moderate for many days, without yielding to the employment of remedies, this termination is to be dreaded, and if irregular shiverings supervene in such a case, and the patient complains of a sense of weight, and an obtuse, instead of the acute pain, which accompanies the inflammatory stage, there will be little doubt of an abscess being formed. The consequences to be feared from such an abscess are similar to those which follow an abscess of the stomach, except that the former seldom or never burst externally. If it bursts into the cavity of the intestines, it produces a purulent diarrhœa; and as the ulcer is rarely cured, the coats of the intestines frequently slough off and are discharged by stool.

The

The patient is wasted by hectic fever, and suffers a lingering and painful death. When the abscess bursts into the cavity of the abdomen, it forms, as in the case of gastritis, the purulent ascites.

There is, perhaps, no inflammation so apt to terminate in gangrene as enteritis. The tendency to gangrene is known here, as in the other phlegmasiæ, by the unusual violence of the symptoms, and by their not yielding to any remedy. The actual presence of gangrene is known by the pulse intermitting, the body being covered with a cold sweat, by thin ichorous, often livid or black, stools passed involuntarily, hiccup, loss of sight, fainting, &c. under which symptoms the patient soon expires. The observations made, when we were speaking of gastritis, respecting the pain not always ceasing upon the commencement of gangrene, are applicable here.

It was observed of gastritis, that it often induces death without the inflammation terminating in any of its usual ways. The same is true of enteritis. The sensibility and importance of the stomach

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and intestines are such that the mere irritation and læsion of function, occasioned by an inflammation of these parts, are often sufficient to destroy life.

Such are the symptoms of enteritis. But we meet with rare instances of this complaint, as well as of gastritis, unaccompanied by the symptoms peculiar to it. To distinguish such cases is attended with much difficulty. Morgagni enumerates some symptoms from his own experience, as well as that of others, by which they may now and then be distinguished.* There is commonly something peculiar in the pulse, the abdomen is hard and swelled, and generally in some degree painful, particularly on being pressed. It has been remarked, that there is something peculiar in the countenance, which, however, is different in different cases. The eyes are staring, and the parts about the lips livid. The tongue is often foul, and

* See Boerhaave's Aphorisms on this disease, Van Swieten's Commentaries on them; Sir J. Pringle's Account of the Diseases of the Army; Morgagni de Causis et Sed. Morb. Epist. xxxv; De Haen's Ratio Med. vol. iv.

the

the thirst considerable. I have met with several cases resembling these, in which, however, the inflammation seemed seated in the peritoneum; they were of a chronic nature, and generally yielded to local blood-letting and blistering with gentle cathartics.

When we were speaking of inflammation in general, it was observed, that gangrene of external parts sometimes supervenes without previous inflammation. Many have thought that this now and then happens in internal parts, particularly in the intestines, which may serve, perhaps, to account for some of the anomalous cases of this disease. Inflammation of the intestines sometimes produces a real volvulus or intussusceptio. It is probable, that this has taken place when part of the gut sloughs off. The patient may survive the sloughing of the internal coat, although no intussusceptio has taken place.

SECT. II.

Of the Causes of Enteritis.

ALL the causes of gastritis above enumerated may excite enteritis. The latter is more

more readily produced by cold applied either to the extremities or the abdomen. It is less readily excited than gastritis by acrid ingesta. This cause is most apt to excite inflammation in the small intestines; both because it is first applied to them, and because the small intestines are more liable to inflammation than the large, which has been ascribed to their greater delicacy; the contents of the large intestines being of a more irritating nature.

There are some causes which more particularly belong to enteritis, accumulation of the fæces, spasmodic colic, certain states of the bile, concretions forming in various parts of the intestines, herniæ, and volvulus.

A deficiency of the omentum is also ranked among the causes of enteritis. Nor is this surprising, says Quarin, since by the omentum the intestines are covered, fomented, and lubricated.

SECT. III.

Of the Treatment of Enteritis.

THE remedy on which we chiefly rely in enteritis, as in other visceral inflammations,

is blood-letting. The observations we made respecting the extent and repetition of blood-letting, in speaking of gastritis, are in every respect applicable here.

Catharsis is more generally employed in enteritis than gastritis, and as the nausea and vomiting are often less urgent, we have an opportunity in most cases of exhibiting cathartics by the mouth, which should never be neglected, but we must proceed cautiously, and recommend such cathartics as are least apt to offend the stomach. The saline and mercurial cathartics seem particularly well adapted to this complaint. The latter should be given in combination with other cathartics, which render its operation both more certain and more easy. The employment of cathartics by the mouth should not prevent the use of mild clysters, which both soothe the pain and tend to secure the operation of the cathartics. Blood-letting should precede the cathartic, that time may not be lost, and because it is not only the more powerful medicine, but a gentle cathartic, after the inflammatory disposition is moderated by blood-letting, will operate with

with more certainty than a more powerful one where this remedy has not been employed. And this observation is also applicable to clysters. When the nausea and vomiting are considerable, we often find it as impossible here, as in gastritis, to give any thing by the mouth; clysters must then be used more frequently and composed of more cathartic materials.

Clysters in enteritis should not be so bulky as greatly to distend, which always irritates, the intestines, and they should be given cautiously, that the large intestines may not be injured by sudden distension, nor the small by compression. By these means the clyster will be more readily retained, and consequently better calculated to move the bowels. Even when enteritis is attended with diarrhœa, the injection of mild mucilaginous and oily fluids is generally serviceable.

The observations made respecting the use of opium in gastritis might be repeated here. Some practitioners speak of the employment of opiates even at an early period of enteritis as a safe practice. "I have often seen

"antispasmodics,"

"antispasmodics," Dr. Gibson observes, "and particulary opiates, successful in re-"moving this disease."* There is every reason to believe, that those who make such observations have confounded other pains of the bowels with enteritis, which has frequently been done. Sir John Pringle recommends opium to be given with cathartics, for the purpose of enabling the stomach to retain them. This, particularly at an early period, is a very questionable practice; and on comparing the definition of this disease, which Sir John Pringle, following the Ancients, seems to adopt, in which there is no mention of fever, with some parts of his practice, it would appear probable, that even he is not wholly free from the above charge. It is an observation of Van Swieten and others well acquainted with enteritis, that when opiates are given at an early period, it frequently terminates in gangrene.

It may be asked, why opium is so hurtful in gastritis and enteritis, while we find it in many external inflammations, when ap-

* Dr. Gibson's Treatise on Fevers.

plied to the inflamed part,* among the most powerful remedies. This seems to arise, as may be inferred from what was said above, not from the local action of the opium on the stomach and intestines, but from its being received into the mass of blood, and, by stimulating the vessels, increasing the vis a tergo. Thus it is from the opposite effect, that of allaying the action of the vessels, that saline medicines and certain narcotics prove useful in all inflammations.

Most of the observations respecting local as well as general remedies, made when we were speaking of gastritis, are applicable to the case before us. Among the former, blood-letting and blistering are still the principal. It sometimes happens when the inflammation is seated in the rectum, that the piles inflame and swell. Leeches applied in the neighbourhood, or to the piles themselves, are then the best remedy. In enteritis the blisters should always be applied to some part of the abdomen, and they should be of considerable size. Some prac-

* See the observations made above, on the external use of opium in ophthalmia.

titioners recommend applying them at the same time to the limbs, which is attended with little or no advantage. The pain is often relieved as soon as the burning of the skin is perceived ; and what deserves particular notice, the same cathartics and clysters, as in the case of blood-letting, procure stools, which before the application of the blisters had failed.

Rubefacients are often serviceable. Flannel dipt in brandy and sprinkled with pepper applied over the abdomen generally affords some relief.

Fomentations are more frequently employed in enteritis, than in any other phlegmasia. A variety of disagreeable applications has been recommended for the purpose of fomenting the abdomen. Boerhaave and others recommend young animals cut up and applied warm, the skin of sheep newly killed, &c. But there is no reason to believe that such applications are superior to cloths dipt in warm water, and wrung so that little more than the vapour is applied to the body. These are not only more cleanly and can be applied of any tempera-

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ture, but lighter also and more easily managed. Eller, who is a great advocate for the use of fomentations in this complaint, particularly insists on their being such as shall not by their pressure increase the patient's uneasiness.

The warm bath, especially the semicupium, is also recommended. Both this and the fomentations, however, often increase the weakness and anxiety; when this does not happen, they may prove serviceable, but should not supersede the employment of blisters, which are a much more efficacious remedy.

The diet is the same as in other visceral inflammations.

To prevent a relapse, the diet should be mild and the body kept gently open for some time after every symptom of the complaint is gone.

With regard to the treatment after suppuration has commenced in enteritis, there is little to be done. When the abscess bursts into the cavity of the intestines, agrimony, virga aurea, and other medicines, have been recommended as means of heal-

ing

ing the ulcer, but little or nothing is to be expected from them. If the patient is much reduced by the discharge, an infusion of the bark and some chalibeate waters have been found useful.

When the abscess bursts into the cavity of the abdomen, it appears, from what has already been said, that the case is as hopeless, (though death is generally longer delayed) as where the inflammation terminates in gangrene.

CHAP. XV.

Of Acute Hepatitis.

ACUTE hepatitis is defined by Dr. Cullen, Fever, tension and pain, either pungent or obtuse, of the right hypochondrium, pain at the clavicle and top of the right shoulder, the patient lying with difficulty on the left side; dyspnœa; a dry cough; vomiting, and hiccup.

All of these symptoms are rarely met with in the same case. When the dyspnœa and cough are considerable, for instance,

there is generally no vomiting; and when there is frequent vomiting, the patient is seldom troubled with a great degree of dyspnœa, and still more rarely with much cough. It is necessary, however, to mention in the definition of hepatitis, symptoms which only occasionally attend, because the constant symptoms of this complaint are not sufficient to distinguish it. On this account both Sauvages and Sagar rank among the diagnostic symptoms of hepatitis those of jaundice, but their presence is not sufficiently frequent to assist much in the diagnosis.

SECT. I.

Of the Symptoms of Acute Hepatitis.

LIKE other inflammations, hepatitis makes its attack more or less suddenly, the patient sometimes complaining of a tightness about the precordia, acccompanied with a degree of anxiety and fever, for some time before the symptoms peculiar to the complaint shew themselves; at other times the pain in the region of the liver being among the first symptoms. In either case the accession

accession is frequently attended with some degree of cold shivering.

The chief diagnostic symptoms of this complaint are, the seat and kind of the pains which attend it. The acute hepatitis is almost always attended with a pain in the right hypochondrium, which is sometimes shooting, accompanied with a sense of tension in the part; in some cases it is constant and severe, in others deep seated and obtuse.

The pain, however, is not confined to the region of the liver; it extends to the breast, clavicle, and shoulder of the right side, and in the last it is often more acute than in the seat of the disease. The pain of the hypochondrium is increased on pressure, especially when the position of the body is such as to relax the abdominal muscles.

Practitioners have been at some pains to determine what part of the liver is affected in different cases of hepatitis. When the pain extends to the clavicle and chest, the convex part is most frequently affected; when it is much increased on pressure, the anterior part of the liver is the chief seat of the disease. When the pain extends chiefly

to

to the region of the stomach, and is not much increased on pressure of the right hypochondrium, there is then reason to believe that the inflammation chiefly occupies the concave part, in which case the pain sometimes extends to the abdominal muscles, and the complaint has been mistaken for an inflammation of them.

In this, as in other visceral inflammations, the kind of the pain has been supposed to point out whether the membrane or the parenchima is the seat of the disease; in the former case the pain being acute, in the latter obtuse. This observation, however, as I have more than once had occasion to remark, is not to be depended upon.

Dr. Girdlestone observes, that when pain of the shoulder attends hepatitis, its seat generally corresponds with the part of the liver most affected, being anterior or posterior, according as the anterior or posterior parts of the liver are the seat of the complaint. When the inflammation attacks the left lobe, the pain is often in the left shoulder. Dr. Chisholm* says, that it is

* See a Paper on Hepatitis, by Dr. Chisholm, in the 11th vol. of the Medical Commentaries.

sometimes

sometimes in both scapulæ, and now and then felt in the left side under the lower false ribs.

It is generally most severe when the patient lies on the left side; sometimes, though rarely, when on the right side; in many cases he finds himself easiest on the back, with the head low.

The pain of the side, as well as the shoulder, is often increased during inspiration, which is impeded by it. As might be supposed, it is most so when the parts lying nearest the diaphragm are inflamed; it is in these cases too that the cough which accompanies this complaint is most severe, and that hiccup most frequently supervenes.

The cough is generally short, dry, and frequent, and the hiccup, which is never a favourable symptom, is sometimes so violent that it almost interrupts respiration.

When hepatitis is attended with cough and difficulty of breathing, the reader will perceive how readily it may be mistaken for pneumonia, and he will find from the dissections of Morgagni and others, that this has frequently happened. When the con-

vex

vex surface of the liver is much inflamed, the inflammation sometimes actually spreads to the diaphragm and even to the lungs.

In inflammation of this part of the liver, the external swelling is often considerable, but the inflammation is seldom communicated to the skin.

When the concave part is affected, the stomach partakes of the disorder as much as the lungs do; in the former case, the nausea and vomiting being more urgent than in other forms of hepatitis, and here the cough and dyspnœa are either wanting or present in a much less degree. In most instances the secretion of bile is increased, and it sometimes happens, that its flow into the intestines is prevented, generally, perhaps, by a constriction of the ducts. The skin, white of the eyes, and urine, are then tinged with yellow, as in jaundice. These symptoms, as we should suppose a priori, most frequently attend when the inflammation is seated in the concave part of the liver.* Inflammation of this part of the

* See the observations of Burserius, Quarin, and others.

liver

liver also is generally attended with the same anxiety and debility, though generally in a less degree, which attend gastritis, from which it is often difficult to distinguish it. The truth is, that although there are many cases of pneumonia, gastritis, and hepatitis, in which the characteristic symptoms of each being distinct, there can be no doubt respecting the seat of the inflammation; yet, from the vicinity of the lungs, liver, and stomach, the sympathy of these parts, the difficulty with which the precise seat of internal pains is ascertained, and above all, the tendency of inflammation to spread to neighbouring parts, these complaints have sometimes been confounded by the most discerning.

The pulse when the concave part of the liver is affected, is often small and feeble; in other cases it is strong; in all hard. The urine, whether tinged with bile or not, is generally high coloured, the heat and thirst considerable, the mouth dry, and the tongue covered with a white yellowish crust, which, in the progress of the disease, often assumes a dark or even black colour. The

strength

strength is reduced by constant watching; and delirium sometimes, though not frequently, supervenes.

In some cases the bowels are costive, in others a diarrhœa comes on, with griping and bilious stools. It now and then happens, that the purging is dysenteric; the case, however, is then to be regarded as complicated; for the dysentery may be looked upon as a distinct complaint, generally occasioned by the irritation of an unusual quantity of bile in the intestines, and that often vitiated.*

It is to be remarked, however, that the bilious and slightly bloody stools, which frequently attend hepatitis, have by careless observers been mistaken for dysentery; which has given rise to the opinion of these complaints being more frequently complicated than they really are.

The tendency of hepatitis to resolution, as of other similar complaints, is known by the general mildness of the symptoms and their yielding to the proper remedies, par-

* See the observations of Van Swieten. Com. in Aph. Boerh.

ticularly

ticularly by there being little dyspnœa, cough, hiccup, vomiting, oppression, or debility.

As in other febrile diseases, there are certain symptoms which frequently attend the favourable termination of hepatitis, amongst these are hemorrhagies, particularly those from the nose and hemorrhoids. Hepatitis is sometimes terminated by sweat, which, when symptoms of jaundice attend, often stains the linen of a yellow colour. An increased secretion of mucus from the lungs is also to be ranked among the crises of this complaint; and instances are on record in which this secretion has been so copious towards the termination of hepatitis as to occasion suffocation. A copious flow of high coloured urine, depositing a red or whitish sediment is also a favourable symptom, particularly if it appears before the fourth day.

When hepatitis is terminated by resolution, Lieutaud observes, it is generally in three or four days; if it last to the seventh, there is little doubt of its terminating in suppuration.

When

When this complaint terminates by metastasis, the inflammation is frequently translated to the spleen or the skin, appearing on the latter in the form of erysipelas.

Resolution is the only termination of hepatitis which can be regarded as favourable, although suppuration is upon the whole less fatal here than in most other visceral inflammations. There are few of the viscera in which inflammation is more apt to run to suppuration, than the liver. Sir John Pringle observes, that, next to the lungs, this is the viscus most apt to suppurate.

We judge of the tendency to this termination by the violence and obstinacy of the symptoms. In most phlegmasiæ an unusual violence of the symptoms indicates a tendency to gangrene. Here, however, gangrene rarely occurs.

As soon as suppuration takes place, the pain remits, and there is generally a sense of weight and pulsation in the region of the liver, the former being increased by lying on the left side. These symptoms are attended with frequent and irregular shiverings, and at length with hectic fever.

In

In many cases there is an evident tumor, and the fluctuation may be readily felt. Lieutaud and Burserius caution us against mistaking the distended gall bladder for abscess of the liver; from the situation of the gall bladder, however, this mistake cannot readily be made.

The danger from suppuration in hepatitis depends much on the seat of the abscess. When it evidently points outwards, there is almost always an adhesion of the liver to the parietes of the abdomen, the matter is readily discharged by an incision, and the patient frequently recovers. Dr. Clark of Dominico* says, that of those in whom the matter was discharged in this way, two in three were saved. Few practitioners seem to have met with equal success.† When the abscess is seated in the more internal parts of the liver, there is no external swelling, and the fluctuation can rarely be perceived.

* Medical Commentaries, vol. xiv.

† The wound formed by opening the abscess seldom heals readily, but the health frequently improves rapidly after the operation.

perceived. In such cases adhesions are often formed with the intestines, and the abscess bursting into them is discharged by stool, and the patient sometimes recovers. Dr. Cullen, Dr. Saunders, and others, think it probable, that the matter sometimes passes along the biliary ducts into the intestines. An adhesion is sometimes formed with the diaphragm, and the abscess bursts into the cavity of the thorax. There is, perhaps, no instance of a recovery after this accident. The patient is gradually wasted by hectic fever. In other instances the lungs are involved in the adhesion. The diaphragm adheres to the liver, and the lungs to the diaphragm. The abscess then often bursts into the substance of the lungs, and either occasions suffocation, or, when the quantity of matter is small, purulent expectoration and hectic fever. Purulent expectoration may occur in hepatitis without any direct communication between the liver and lungs, in consequencc of the inflammation spreading to the latter, and either occasioning abscess there, or a purulent

secretion

secretion from the surface of the bronchiæ.* Sometimes, though more rarely, suppuration takes place in the liver without any adhesions being formed, and the matter is discharged into the cavity of the abdomen, occasioning the purulent ascites.

The period of suppuration in hepatitis is various, according to the violence of the symptoms, temperament, and habit of the patient, mode of treatment, &c.

Hepatitis, though very rarely, terminates in gangrene. The tendency to gangrene is known by an unusual violence of the symptoms, rapidly increasing, and not yielding in any measure to the proper remedies. When gangrene has actually supervened, the inflammatory symptoms subside suddenly, cold sweats supervening, and the pulse becoming weak and fluttering, with constant hiccup and cold extremities. There is generally a black matter rejected by vomiting, the stools being unusually offensive and of a dark colour; and fits of

* See a Paper, by Aaskow, in the Act. Soc. Med. Haf. vol. ii.

syncope frequently precede death, which is never long delayed. This case is as hopeless as the cases of gangrene we have just been considering.

Dr. Cullen does not enumerate schirrus of the liver among the terminations of hepatitis. It has, however, generally been ranked among them. But, from the observations of Dr. Saunders and others, it would appear, that schirrus is rather regarded by them as a consequence of chronic than acute hepatitis, and the symptoms of the former are often so equivocal, that its presence is not always ascertained with much accuracy. I have not been able to trace any one of very many cases of schirrus liver which I have met with, to acute hepatitis. And I do not find that those who have maintained that it proceeds from the chronic hepatitis, have adduced facts sufficient to establish their opinion, for it is to be recollected, that more or less languid inflammation generally accompanies and seems to be occasioned by a schirrous state of the viscera.

SECT. II.

Of the Causes of Acute Hepatitis.

HEPATITIS is more frequent in the warm than in cold or temperate climates.

It is most apt to attack those of a choleric and melancholic temperament. Adults are more subject to it than those under puberty. Dr. Girdlestone remarks, that while the other soldiers were seized with this complaint, the drummers and others who were under age, although equally exposed to fatigue, the heat of the climate, &c. seldom suffered from hepatitis.

The small lobe of the liver is most subject to inflammation, and the outer and convex surfaces more than the concave. In Britain the liver is upon the whole less subject to acute inflammation than most of the other viscera.

The occasional causes of hepatitis are very numerous. Many of those mentioned by authors have been assigned, Dr. Cullen thinks, on a very uncertain foundation. He, however, seems rather inclined too

 much

much to abridge the number of the occasional causes of this disease. It must be granted, indeed, that many of those assigned by authors, particularly certain supposed states of the bile and of the circulation in the vena portarum, seem quite hypothetical.

Among the most frequent causes of hepatitis may be ranked contusions, especially such as occasion a fracture of the cranium. After accidents, in which the cranium is much injured, there is often an unusual secretion of bile, and other symptoms denoting derangement in the function of the liver. Blows or contusions on other parts of the body, however, often excite this disease. Violent passions of the mind, particularly rage and the depressing passions, are to be ranked among the causes of hepatitis. Melancholy, which has been found to diminish the secretion of bile, seems particularly apt to excite hepatitis; and the state of the mind is certainly so far connected with that of the liver, that the latter is seldom deranged without occasioning a greater or less degree of this passion. The constant application of a great degree of heat

heat in any form, is a frequent cause of hepatitis, but what we should not, a priori, expect, the rays of a vertical sun on the head is one of the modes of applying heat most apt to excite it.*

Among the causes of hepatitis, violent exercise holds a principal place. It is common in warm climates for soldiers in long and fatiguing marches to be seized with this complaint.

A variety of fevers has been ranked among the causes of hepatitis, particularly intermitting and remitting fevers, probably from these being the most frequent in the climates most liable to complaints of the liver. Hippocrates, Boerhaave, Van Swieten, and others, however, bear testimony of its being frequently excited by fevers of various kinds. And the first of these writers justly regards its appearance in low fever as a very unfavourable accident. There is often an unusual enlargement of the liver, heart, and spleen, in those who die of the plague.† The same observation has been made re-

* See the observations of Dr. Girdlestone.

† See le Traité de la Peste.

specting the scurvy. How far these appearances arise from inflammation has not been ascertained.

As in the other phlegmasiæ, cold is a frequent exciting cause, especially when applied suddenly, whether to the surface or to the stomach, while the body is over heated. The damps of the night in warm climates frequently excite this disease.

Among the causes of hepatitis may be mentioned the concretions so frequently formed in the gall bladder and ducts. A schirrus of any part of the liver, or neighbouring part pressing on the liver, may excite this complaint. Does hepatitis ever arise from a vitiated state of the bile? There is reason to believe that any cause obstructing the course of the bile into the intestines, whether it be a biliary calculus sticking in the ducts, a spasmodic contraction of them, an inflammation communicated to them from the intestines or other neighbouring parts, tumors of the liver, or other parts pressing on them, worms lodged in them, &c. may occasion hepatitis. In various animals, oxen, calves, sheep,

small

small worms have been found in the biliary ducts.* And it would appear, from some dissections, that this has sometimes happened in the human body.† But the opinion of Van Swieten, that worms may sometimes find their way to the liver through the mesenteric artery, seems quite hypothetical. The same may be observed of the opinions which have prevailed respecting the manner in which the foregoing causes affect the circulation in the liver, concerning which much has been said. If it be admitted that inflammation depends on a debility of the extreme vessels, the modus operandi of these causes will be evident.

Dr. Cullen ranks among the occasional causes of the acute hepatitis, the chronic form of this disease; for the two forms frequently pass into each other.

Hypochondriasis, cholera, and other diseases of the alimentary canal, are ranked among the causes of hepatitis.

Like other inflammatory diseases, it often

* Van Swieten's Comment. in Aph. Boerhaavii.

† See a dissection, by Nebelius, in Nova Acta Physico Medica, vol. v.

arises

arises from the suppression of some habitual discharge, paricularly from that of the hæmorrhois.

There is no other of the phlegmasiæ, perhaps, so frequently excited by the use of spirituous liquors, as hepatitis. Its frequency in India is ascribed, by Bontius and others, to the general use of arrack.

Dr. Girdlestone mentions bad water among the causes of hepatitis; and Dr. Cleghorn remarks, that in a certain part of Minorca, where the water is bad, tumified spleens and livers are frequent both in men and brutes. Various other circumstances in diet are ranked among the causes of this disease in warm climates. The want of vegetables, great repletion after fasting, bad diet in general, particularly the want of a proper quantity of fluid. Violent and long continued thirst is mentioned by a variety of writers, particularly those of warm climates, as a frequent cause of hepatitis. Boerhaave remarks, that it is most apt to supervene in fevers when the patient has fasted for some time and indured much thirst.

Is the frequency of this complaint in both the Indies to be at all attributed to the great quantity of peppers used in those countries?

Dr. Girdlestone and others mention the abuse of mercury among the causes of hepatitis.

In a paper, above referred to, Dr. Chisholm maintains that it is contagious. This, however, is not confirmed by the observations of others.

SECT. III.

Of the Treatment of Acute Hepatitis.

THE treatment of hepatitis so nearly resembles that of the phlegmasiæ we have been considering, that it will not be necessary to speak of it at length.

When the inflammatory symptoms are considerable, blood-letting is necessary, and, on account of the great tendency of hepatitis to suppuration, it should be employed early. Lieutaud observes, that we should seldom let blood in this complaint after the fourth day, unless some particular symptoms demanding

demanding blood-letting, make their appearance.

We shall, however, be better guided by the state of the symptoms, than by any rule of this kind. When the pulse is hard and the pain urgent, blood-letting is proper at any period. It is the opinion of Quarin and others, that less blood-letting is necessary in hepatitis, on account of the peculiarity of the circulation in the liver. It is true that blood-letting ought not to be carried to the same extent in this complaint, as in gastritis and some other phlegmasiæ, not, it would appear, for the reason here assigned, but because in hepatitis the inflammatory symptoms seldom run so high, and the organ affected is less essential to life.

Cathartics are employed with great advantage in hepatitis. The saline cathartics, with much dilution, are particularly recommended by Lieutaud and others. Dr. Girdlestone remarks, that by small doses of the neutral salts, given at intervals, so as to keep up a constant catharsis, the acute hepatitis is sometimes changed into the chronic, a form of the disease less dangerous, provided

provided we are aware of its presence. Mercurial cathartics seem better adapted to hepatitis than any other, but of the use of mercury in this complaint I shall presently have occasion to speak more particularly.

The exhibition of cathartics should not supersede the use of copious mild glisters, which are particularly serviceable, both as a fomentation, and a means of removing irritation, and supporting the discharge from the intestines.

The diet in hepatitis should be the same as in the other phlegmasiæ.

The local remedies, and the mode of employing them, are the same as in other visceral inflammations. Unless the symptoms are unusually violent, the application of a blister should not be longer delayed than after the first blood-letting. It should be applied as near the place affected as possible. And the constant repetition of blisters during the complaint, is preferable to supporting the discharge from the same blister, as many have recommended.

Local blood-letting will still be found to supply the place of general evacuations, particularly

particularly after the violence of the disease is broken, and consequently to diminish the extent to which it is necessary to carry them.

Fomentations are more generally employed in hepatitis than in most of the phlegmasiæ, and are often attended with considerable advantage. A large quantity of any mild warm fluid received into the stomach, is often found more effectual than external fomentation.

The appearance of any of the crises demands attention; when a bilious diarrhœa, which in this complaint, we have seen, is often mixed with blood, supervenes, we ought neither to check nor increase it by cathartics, but merely encourage it by mild mucilaginous decoctions. When the urine appears turbid, many recommend diuretics, a practice which seems to rest chiefly on hypothesis, and from which little is to be expected. If an erysipelatous inflammation appears on any external part, bringing relief, we must be cautious of using any means which tend to remove it. Spontaneous bleeding from the nose or any other part

part of the body, is to be encouraged by fomentations. And if the blood flows very slowly, it is sometimes found useful to apply leeches as near as we can to the seat of the hemorrhagy. This has been particularly recommended where a tendency to hemorrhois shews itself. When an expectoration attends the cough and seems to bring relief, it is often serviceable to promote it by the antimonium tartarisatum, which, with other nauseating medicines, we have seen, are useful in all the phlegmasiæ. When a moisture appears on the skin, mild, mucilaginous, and diaphoretic decoctions should be freely employed.

After the inflammatory symptoms have subsided, the strength of the patient is to be restored by an invigorating diet and wine; and as soon as they can be employed without the danger of a relapse, by tonic medicines, for there are few complaints which leave behind them more languor and debility than hepatitis.

It is also very readily renewed, so that it is necessary for some time after the disease is removed, to pay particular attention to diet,

and

and to avoid the various exciting causes of the complaint above enumerated.

It is now common, particularly in the East Indies, to use mercury in all affections of the liver. I shall have occasion to speak of its use more at length in treating of the chronic form of this complaint, in which it has been more generally employed. It may be observed here, that we have reason to believe, notwithstanding the observations of Dr. Saunders and others, that, especially employed as a cathartic, mercury is a valuable medicine in the acute hepatitis. Dr. Girdlestone, Dr. Chisholm, and others, who have practiced in warm climates, speak of it as the remedy on which, next to blood-letting, they chiefly relied. Nor did they trust to its cathartic powers, but endeavoured to excite salivation even in the most acute forms of the disease.

The employment of mercury in the acute hepatitis, however, has not been confined to the Indies. Dr. Clark of Newcastle says, he has used it with great success when mere cathartics had been employed in vain.

I have already had occasion to hint that the

the acute hepatitis sometimes terminates in the chronic. When this happens, a careless observer may believe the patient restored to health. After the inflammatory symptoms have disappeared, therefore, it is necessary to examine him with care. We must feel whether there be any hardness or swelling remaining in the region of the liver. If the patient is restored to health, there will be no pain in this region, on pressure, while the patient is in different postures, nor pain nor itching in the right shoulder, no anxiety after eating a full meal or using exercise; and if jaundice has appeared in the course of the disease, the skin, eyes, fæces, and urine, will assume their natural colour. But we are about to consider the symptoms of chronic hepatitis at greater length.

CHAP. XVI.

Of the Chronic Hepatitis.

ALTHOUGH chronic hepatitis, being frequently unattended by fever, does not come under the description of the diseases

considered in this treatise, yet such is its connection with the acute form of the complaint, that it is impossible to be thoroughly acquainted with the treatment of either without understanding that of both.

Dr. Cullen makes the following apology for passing over in silence the chronic form of the disease. "The chronic hepatitis," he observes, "very often does not exhibit "any of these symptoms," viz. the symptoms of the acute, "and is only discovered "to have happened by our finding in the "liver, upon dissection, large abscesses, "which are presumed to be the effect of "some degree of previous inflammation. "As this chronic inflammation is seldom to "be certainly known, and therefore does "not lead to any determined practice, we "omit treating of it here, and shall only "treat of what relates to the acute species "of hepatitis."

But although we cannot at all times determine the presence of this complaint, yet in by far the majority of cases this may be done. Besides, the chronic hepatitis sometimes

sometimes assumes the form of other complaints, which would lead those unacquainted with it into errors of serious consequence.

Although Dr. Cullen declines treating of the hepatitis in his First Lines, in his System of Nosology he enumerates the symptoms from which we may suspect its presence. We may suspect the presence of the chronic hepatitis, he observes, from the causes of this complaint having been applied, from a sense of fullness and weight in the right hypochondrium, from pains more or less pungent in the part, from some pain being felt in it on pressure, or on lying on the left side, and lastly from a degree of fever attending these symptoms.

SECT. I.

Of the Symptoms of Chronic Hepatitis.

IN the definition just quoted Dr. Cullen enumerates the principal symptoms of the most common form of chronic hepatitis. But this complaint assumes such various appearances, that were it not for the treat-

ment and appearances on dissection being similar in all, they would be regarded as complaints as distinct as any with which we are acquainted.

The chronic hepatitis very often begins with symptoms of indigestion. The appetite is irregular, and after eating, the patient is troubled with acidity, flatulence, and a sense of fulness in the stomach, the countenance becomes pale and yellowish, swollen, sometimes bloated, and the eyes dull and languid.

There is a sense of uneasiness about the hypochondria, sometimes attended with shooting pain, which frequently extends to the clavicle and right shoulder; the pain of the hypochondria, and sometimes of the clavicle and shoulder, being increased by pressure on the region of the liver.

The pain is sometimes confined to the right shoulder, and sometimes felt chiefly when the shoulder is pressed, sometimes it is rather an itching than pain.

During the course of the disease the patient often complains of pains of various kinds, either dull or acute, frequently attended with

with a sense of weight or fullness in the epigastric and hypochondriac regions, and with some degree of hardness and tumor of these parts, particularly of the right hypochondrium. In some there is a dull pain in the lumbar region.

As in other cases of indigestion, there is much languor and lassitude, with an inclination to sleep. The sleep, however, is seldom refreshing and often interrupted by dreams. The patient becomes melancholy and fond of retirement. The state of the bowels is very variable, being sometimes costive, sometimes affected with diarrhœa. The stools are at one time of an ash colour, at an other yellow or almost black, and very fetid. They are sometimes frequent, small, and mucous, the abdomen at the same time being tense and hard.

The pulse in many cases undergoes little change, being only more feeble and languid than natural. In some cases it is slower, in others stronger and more frequent.* When there is much soreness, on pressure, in the

* Dr. M'Lean's Thesis, published at Edinburgh in 1790.

region of the liver, the pulse is more or less hard, paticularly in the evening.

The tongue is generally foul, for the most part white and dry, and the gums often become harder than natural. The skin is parched, hard, and constricted, especially, Dr. Girdlestone remarks, on the muscular parts of the body; the urine scanty and high coloured.

The breathing is generally much affected. A degree of dyspnœa, accompanied with a dry teazing cough, sometimes comes on at an early period, almost always in the progress of the complaint, the shoulders appearing daily more elevated. It sometimes happens that the dyspnœa is unattended by a cough, and more frequently that the cough is moist, the patient expectorating with difficulty, but experiencing considerable temporary relief to the breathing from bringing up a little phlegm or mucus, of which the matter expectorated in this complaint generally consists. Towards the termination it frequently assumes more or less of a purulent appearance. The

pain

pain of the hypochondrium is generally increased during the exertion of coughing.

Lying on either side, particularly on the left, frequently occasions uneasiness, and the patient feels his complaint least when he lies on the back, turning a little to the right, with his shoulders gently raised.

Acute pain, hiccup, and vomiting, are more rare in the chronic, than in the acute hepatitis. In the former, as well as in the latter, some degree of jaundice frequently appears. These symptoms, with more or less rapidity, gradually increase. Fever shews itself, particularly in the evening, which is soon accompanied with night sweats, emaciation, great debility, and fetid and putrid stools. In short, complete hectic comes on in consequence of the formation of one or more abscesses, which, bursting where the least resistance is opposed, generally prove fatal.

It sometimes happens, (as in the acute hepatitis) indeed, that adhesions are formed between the liver and parietes of the abdomen, the matter pointing outwardly is discharged by the skin, and the patient

often recovers. The abscess may also burst in any of the other ways mentioned when we were speaking of the acute hepatitis.

In the chronic hepatitis it sometimes happens, that the abscess is not formed in the liver, but in the lungs, several cases of which I have seen. It is observed above, that the inflammation of the liver is sometimes communicated to the lungs, this happens most frequently in the chronic hepatitis, in which the liver, often remaining for a long time in an enlarged and perhaps indurated state, by the irritation it occasions, excites inflammation and suppuration in that part of the lungs on which it presses, the consequence of which is a confirmed phthisis.

Can chronic hepatitis and schirrus of the liver in all cases be accurately distinguished? Whether schirrus be the consequence of chronic hepatitis, or an incipient schirrus occasion this complaint, certain it is, that after the foregoing symptoms have continued for some time, an induration of part of the liver may frequently be felt, especially if the patient be laid on the back,

with

with the knees a little raised so as to relax the abdominal muscles.

"The patient frequently continues labouring under the symptoms of chronic "hepatitis until the dejection of spirits, "which always more or less attends this "disease, prompts him to the immoderate "use of wine, which scarcely ever fails to "accelerate the approach of the acute or "inflammatory stage."* For as the acute hepatitis often terminates in the chronic, when the patient is about to recover, the chronic often terminates fatally, by inducing the acute form of the disease.

It is almost unnecessary to observe, that all the symptoms which have been enumerated are never present in the same case; and such is the insensibility of the liver, that dissection has discovered abscesses in it where none of them had appeared.

In some cases the symptoms of hepatitis are of a very different nature. There is a fever, known in the East Indies under the name of the hill fever, from its being frequent in the hilly part of the Carnatic,

* Dr. Girdlestone.

which

which assumes the form of a very irregular intermittent, resisting all the usual means. The appearances on dissection are the same as in the chronic hepatitis, and it yields readily to the mode of treatment found successful in this complaint. "In all the "cases I have seen of this kind," says Dr. Girdlestone, "the livers were diseased, "especially the left lobes; and the patients "were restored to health only by treating "their complaints as diseased livers."

Another, and very different, form of the complaint is also noticed by Dr. Girdlestone, and less distinctly by some other writers. It appears like a chronic dysentery, the nature of which soon betrays itself, by the appearance of a tumor in the region of the right lobe of the liver, which is found to contain a quantity of purulent matter; and the only means of preventing this termination is treating the complaint as a case of chronic hepatitis. Dr. Lysons, of Bath, in his Practical Essays, observes of the chronic hepatitis, "From the appearance of the "excrements and pain in the bowels this "disorder was deemed a dysentery, and as "such

"such treated to no purpose." Both of these varieties of the complaint are mentioned by Dr. M'Lean, and the latter by Dr. Saunders.

If the reader considers the symptoms above detailed, he will not be surprised at the following remarks. "From repeated "observation," Dr. Saunders observes, "I "am inclined to believe, that the chronic "inflammation of the liver is frequently "mistaken for a dyspeptic state of the sto-"mach; and I have seen many cases of "this kind, which have been supposed to "arise from indigestion. The patient ge-"nerally complains of pain, which he "falsely attributes to the stomach, and its "continuance is so short, and the degree of "it frequently so inconsiderable, that no "alarm respecting the future health of the "patient is produced. The relief obtained "by eructation and discharge of air tends to "confirm the opinion that the disease is in "the stomach; but this relief may be "explained on the principle of removing "the distension of the stomach, and so "taking off the pressure of this organ

"from

"from that which we believe to be the seat "of the disease."

No person acquainted with chronic hepatitis can be long engaged in practice without seeing these observations amply confirmed. In a large proportion of those dyspeptics, who, along with symptoms of indigeston, are troubled with a cough and some affection of the breathing, it will be found, that there is a tenderness in the region of the liver, especially if the state of the bowels is very variable. When this tenderness cannot be detected, by pressing below the ribs, it is often evident, if the ribs which cover the liver be suddenly struck while the position of the patient is such that the liver is pressed against them. When this tenderness is detected, there can be little doubt respecting the cause of the symptoms just mentioned.

The chronic hepatitis sometimes runs its course in a short time. In other cases, it is protracted for months, or even for years.

The chronic hepatitis is a less dangerous complaint than the acute, if it be not overlooked till a tendency to suppuration takes place.

place. The prognosis is then the same, and collected in the same way, as in the acute form of the disease.

SECT. II.

Of the Appearances on Dissection.

INSTEAD of shewing traces of inflammation, as in the acute, in those who die of chronic hepatitis, the liver appears of an ash or clay colour. It generally undergoes some change of shape; the lower edge, Dr. Saunders observes, especially of the left lobe, which is naturally thin, becomes rounded and gibbous, and the whole substance of the liver acquires a firmer and more solid consistence, although, if weighed, it is often found lighter than the healthy liver.

But the appearances of the liver in those who die of chronic hepatitis, is very various. Dr. Lind, in his account of the diseases incidental to Europeans in warm countries, observes, that the liver of those who died of the chronic hepatitis, was sometimes so eaten through as to resemble a honey-comb.

Its

Its size in some cases is much lessened, sometimes it is enlarged; this is frequently the consequence of one or more abscesses being formed in it. In some epidemics, however, as in that described by Dr. Chisholm, in a paper above alluded to, the liver was found uniformly much enlarged without any appearance of abscess.

In other instances it is almost wholly consumed by the abscess. Bontius, in his Obs. Select. in Dissect. Cadav. Descriptæ, relates a case, in which there was found no appearance whatever of liver, but in its stead a membrane resembling a sack, containing a little sanious matter like water in which flesh had been washed. The patient had, for some time before his death, expectorated a matter of the same appearance. Mangetus, in his Bibliotheca Medica, relates a similar instance, only differing in this, that the sanious matter, instead of being expectorated, was passed by stool.

In different cases different parts of the liver are diseased. The left lobe frequently suffers. In many cases there is but one abscess or ulcer; in others, a great number

of

of ulcers or small abscesses are found in different parts of the liver.

The matter found in these abscesses varies, from a tolerably well formed pus to a thin sanious matter, such as was found in the two instances just mentioned. Sometimes it is extremely acrid, corroding the parts in its neighbourhood, even the bones themselves. "In some of those whose livers "came to suppuration," Mr. Bogue observes, in some remarks on this complaint, inserted in Dr. Lind's Essays, "I have "known instances where the matter has "been so acrid as not only to corrode, but "to dissolve, the cartilages at the extremi-"ties of the false ribs, and likewise part of "those ribs." The matter discharged from abscesses of the liver is often very fetid, which is an unfavourable symptom; so that Bontius observes, that when abscesses of the liver are laid open, the prognosis may, in some measure, be gathered from the matter being fetid or otherwise.*

SECT.

* The reader will find a very remarkable disease of the liver, described by Mr. Crawford, surgeon on board

SECT. III.

Of the Causes of Chronic Hepatitis.

I NEED say little of the causes of this form of the disease, since the same causes produce both the acute and chronic. It would seem that the full sanguine constitution is most subject to the former, the exhausted and melancholic to the latter. The circumstances which predispose to each have not, however, been observed with much accuracy. The same circumstances are enumerated by authors as predisposing causes of both. It would appear, that

board of the Earl of Middlesex East Indiaman, in a Treatise, entitled, An Essay on the Nature, Cause, and Cure of a Disease incident to the Liver. The same disease is mentioned as the chronic hepatitis by some foreign writers, who had not an opportunity of seeing Mr. Crawford's treatise. Whether it should be regarded as such it is difficult to say. It resembles more the epidemic, described by Dr. Chisholm, than any other of which I have seen an account. For a particular account of the symptoms of this disease, the appearances on dissection, &c. the reader is referred to the above treatise.

there

there is something in climate which predisposes to the acute or chronic hepatitis, since we find the former chiefly treated of by authors who praticed in Europe, Pringle, Boerhaave, Van Swieten, Lieutaud, M'Bride, Eller, Quarin, Sims, Burserius, Bianchus, Cullen, &c. and the latter by those who practiced within the Tropics, Lind, Clark, Bontius, Rollo, Reid, &c. Others, indeed, Lysons, Millar, Girdlestone, Saunders, &c. describe both forms of the disease, but, for the most part, they either mention the one only as the consequence of the other, or they speak of one of them less from their own observation than that of others.

The chronic hepatitis, however, is a more frequent complaint in Europe than most practitioners are aware of, for its symptoms being obscure, it is frequently overlooked. It has even been epidemic in this part of the world. The reader will find an epidemic of this kind described by Fisher, in the fifth volume of Haller's Disp. ad Morb. Hist. et Cur. Pert. He may also consult two papers in the second volume of the Acta Soc. Med. Hafniensis. Upon the

 whole,

whole, however, the chronic hepatitis in Europe is seldom of that kind which runs to suppuration, but partakes more of the nature of schirrus.

SECT. IV.

Of the Treatment of Chronic Hepatitis.

THE treatment of chronic hepatitis is very simple. The acute and chronic forms of the disease imperceptibly run into each other, so that there are cases which deserve the name of chronic, in which, notwithstanding, the inflammatory symptoms are very evident, so that we occasionally have recourse to powerful anti-inflammatory measures in this as well as in the acute hepatitis. We are particularly cautioned against employing blood-letting where the inflammatory symptoms are moderate; the mild saline cathartics and blisters are sufficient.

I have already had occasion to hint, that it is admitted on all hands, that no remedy in chronic hepatitis is so powerful as mercury. It is alledged by many, that the success

success of mercury in chronic hepatitis has been greatly exaggerated. It would appear, however, that when employed at a proper period of the disease, that is before any signs of suppuration have taken place, it deserves all the commendation bestowed upon it. It is true, as Dr. Lind remarks, that the employment of mercury in this disease is empirical. We can give no account of the manner in which it acts, but no person acquainted with the state of medical knowledge will be less inclined to credit its good effects on this account.

For the most part, the exhibition of mercury should not be carried to a great extent in hepatitis. What is aimed at is gently to affect the gums, and this continued for a fortnight, three weeks, or a little longer, generally effects the cure. In some cases the disease proves more obstinate, and it is necessary to excite a considerable degree of salivation before the symptoms yield.

The languid inflammation of the liver, accompanied with schirrus or a disposition to it, so frequent in this country, yields also to the employment of mercury much

more readily than to any other mode of treatment.

Mercury has been exhibited both internally and by friction in the chronic hepatitis. When in the former way, calomel is the preparation which has been generally employed. When it is exhibited by friction, the region of the liver is preferred for the application of the ointment. It is not improbable, that the friction itself, in the neighbourhood of the liver, may be serviceable, independently of the additional stimulus by sympathy from the vicinity of the parts.

Many give a decided preference to the external use of mercury in the hepatitis. "I observed," says Dr. Girdlestone, "that "where the mercury was given by the "mouth, the gums, after becoming sore, "remained hard and of a natural colour in "many places; in other parts there were "troublesome ulcerations, attended with "copious spitting; whereas from mercurial "friction alone, ulcerations never came on "suddenly, but were always preceded by "such a regular swelling and change of "colour in the gums as to render their

"prevention

"prevention extremely easy." It would appear besides, from the observations of this writer, that the external use of mercury more certainly relieves the affection of the liver; and Dr. Rollo also observes, in his Treatise on the manner of preserving health in the West Indies, that the external use of mercury was more effectual in relieving hepatitis, than calomel taken internally. I think we may sometimes observe in other cases, that mercury exhibited by friction produces a more general and less painful affection of the gums than the internal use of it.

There are cases of chronic hepatitis in which the propriety of employing mercury is doubtful, particularly where it is combined with putrid fevers and other diseases of much debility.* The use of mercury in these cases has not been proved either to be hurtful or useless; from what has been observed in similar cases, practitioners have been afraid to make the trial.

The good effects of mercury in hepatitis

* See Dr. Clark's Observations on the Diseases of the East Indies, page 272.

generally appear as soon as the mouth begins to be affected, and sometimes sooner.* When much difficulty of breathing or pain occurs during the mercurial course, as sometimes happens, even where these symptoms had previously been very moderate, gentle cathartics and blisters may be recommended, or even blood-letting if it be judged necessary, without discontinuing the mercurial friction. When the foregoing symptoms are considerable, some advise the use of the mercury to be laid aside till they are removed. The fatigue of rubbing in such cases may be hurtful; but we have just seen, that mercury is employed with advantage even in the most acute hepatitis, especially when it acts as a cathartic; notwithstanding Dr. Girdlestone's assertion, that small doses of calomel, taken for a considerable time, have even produced the complaint. This may be true without affecting the observation just made, for every thing which greatly deranges

* Dr. Girdlestone observes, that an erysipelatous eruption often breaks out over the whole body after the mercury is employed for some time, which is soon removed by discontinuing it.

the state of the primæ viæ may have this effect. In some constitutions the exhibition of calomel requires much caution.

It was chiefly by moderate blood-letting and the use of calomel that Mr. Crawford treated successfully the liver complaint which fell under his care; for an account of which I have referred to his treatise.

When the patient is too long in applying for assistance, or when the foregoing remedies fail and suppuration has taken place, some of the consequences above enumerated follow, if they are not prevented by laying open the abscess, which may readily be done if it points outwardly. The operation is a very simple, and with some practitioners has proved a successful one.

It is of material consequence to make the incision large enough and in a proper direction to evacuate the whole matter contained in the abscess. Sir John Pringle relates a case in which the patient seems to have lost his life from want of attention to these circumstances. Ruysch, who lived about the beginning of the last century, is among the first who have given cases in which this operation proved successful.

Bontius advises surgeons in the first place to eat through the muscles with caustic, lay open the peritoneum with the knife, and bring the liver in view, which is then to be pierced where the abscess is formed. To this mode of performing the operation there are many objections; besides, as the liver in such cases adheres to the parietes of the abdomen, there is no occasion for so complex an operation. Surgeons used sometimes to pass a trocar into the liver, leaving the canula, through which the matter was discharged. This is also objectionable, the opening made by the trocar being too small. The best method is to make a cut at once through the muscles, peritoneum, and liver, of an extent proportioned to the size of the abscess, and in the most depending place, and having evacuated the matter, by an uniform pressure on the abdominal viscera, the wound should be kept open by dry lint, on removing which the matter may be pressed out as often as the surgeon judges necessary.

After the abscess ceases to discharge, the patient must for some time live cautiously, and

and particularly avoid eating voraciously, which those who are just recovered from this complaint are frequently inclined to do. They should avoid all kinds of distilled spirits, and use but a moderate quantity of wine, otherwise they are subject to a relapse. The moderate use of acids is regarded as a means of preventing this as well as some other diseases of warm climates.

CHAP. XVII.

Of Splenitis, Nephritis, Cystitis, and Histeritis.

I SHALL not enter into any particular consideration of the next four genera in Dr. Cullen's Nosology, the splenitis or inflammation of the spleen, nephritis or inflammation of the kidney, cystitis or inflammation of the urinary bladder, and histeritis or inflammation of the womb. A few words will be sufficient to make the reader acquainted with the symptoms which characterise these complaints, and as to the causes which

which produce them, and the treatment found to relieve them, they are so similar to those of the complaints which we have just been considering, that nothing need be said of them.

The first of these, splenitis, is defined by Dr. Cullen,

Fever, with tension, heat, swelling, and pain increased on pressure of the left hypochondrium, without the symptoms of nephritis.

It was observed above, that this complaint has sometimes been mistaken for pleurisy. In the exquisitely formed splenitis, the pain is dull and the febrile symptoms are not very urgent. When these, with the symptoms just mentioned, are well marked, the complaint cannot be mistaken. The circumstance which renders the diagnosis at all difficult, is the obscurity of the office of the spleen, in consequence of which an inflammation of this organ is only attended with apparent derangement in the function of neigbouring parts.

There is a chronic splenitis analogous to the chronic hepatitis, collections of matter

having

having been found in the spleen where no symptoms of inflammation had appeared.

Dr. Cullen defines nephritis,

Fever, pain in the region of the kidneys, often following the course of the ureter, frequent micturition, the urine being either thin and pale or very high coloured, vomiting, stupor of the leg, and retraction or pain of the testicle on the side affected.

Dr. Cullen makes two species of nephritis, the idiopathic and symptomatic, the former arising from the causes of inflammation in general, the latter generally from calculi lodged in the kidney or in the ureter, obstructing the flow of urine from that organ. The complaint with which the acute nephritis is most apt to be confounded, is the lumbago, especially when the muscles lodged within the pelvis partake of the affection. They may in general be readily distinguished by the change in the appearance of the urine in nephritis, by the nausea and vomiting, which do not, however, always attend this complaint, and the pain being much less increased by muscular exertion than in the lumbago; nor is the lumbago attended with stupor

stupor of the leg, and seldom with much, if any, affection of the testicle. Besides, the febrile symptoms in lumbago are either very moderate or wholly absent.

Clysters are particularly serviceable in nephritis. The application of blisters, Dr. Cullen observes, is hardly admissible, or at least requires great care, to avoid any considerable absorption of the cantharides. It is evident how much the symptoms of nephritis must be increased by strangury. Mucilaginous diluents are at all times necessary in the nephritis vera, and are rendered still more so if blisters are used.

This complaint frequently terminates in suppuration, and ulceration sometimes takes place in the kidney without materially affecting the health, which Dr. M'Bride, with great probability, attributes to the urine constantly washing out the matter.

The cystitis, or inflammation of the bladder, is defined by Dr. Cullen,

Fever, with tumor and pain of the hypogastrium, frequent and painful micturition, or ischuria tenesmus.

The idiopathic cystitis is a rare complaint. Inflammation

Inflammation of the bladder is most frequently the consequence of some other disease of the part, most frequently of calculi lodged in it.

Dr. Cullen defines histeritis,

Fever, heat, tension, and pain of the hypogastrium, the os uteri being painful to the touch, vomiting.

It is common for writers to treat of the inflammation of the pancreas and omentum as distinct complaints. When, however, the reader reflects on the situation of these parts, and how readily the organs in the neighbourhood of those affected with inflammation partake of it, or sympathise with the diseased part even where they do not partake of it, he will readily believe that inflammation of the pancreas and omentum is not to be distinguished from some of the foregoing phlegmasiæ.

CHAP. XVIII.

Of the Rheumatism.

RHEUMATISM, like hepatitis, is either acute or chronic. Of the latter I shall say but

but little, as it certainly does not belong to the class of febrile diseases. There was a similar objection to treating of the chronic hepatitis. But this being a disease of greater importance, and far less simple than the chronic rheumatism, and being occasionally attended with more or less fever, I thought it proper to speak of it at some length.

It is with little propriety that either the chronic hepatitis or chronic rheumatism are arranged under the definition of phlegmasiæ. Dr. Cullen could not, however, have arranged them otherwise without having made a material alteration in his system. Besides, the immediate connection of these with the acute forms of the disease, seems to afford an apology for the place which they hold in his nosology.

The only method of forming an accurate system of nosology is to class diseases according to their symptoms, and where we find the symptoms so dissimilar, and the nature of the complaints so much allied, we are at a loss how to proceed.

Whatever is done in a system of practice, it would seem that in a system of nosology

we ought to study the symptoms of diseases alone. If any other principle is admitted, the most dissimilar affections will frequently be classed together, according as the hypotheses of different writers lead them to conceive diseases allied to each other. There is no better reason for arranging the acute and chronic rheumatism or hepatitis under the same order of diseases, than for arranging together any other complaints which insensibly run into each other.

It would seem, that in forming a system of nosology our study should be to select the symptoms which chararacterise each disease in its perfect form, and arrange those together whose symptoms are most similar, without attending to the various gradations by which diseases run into each other. Is it our aim, in forming such a system, to assist the learner in enabling him to distinguish diseases? This is the simplest way; after he is acquainted with such a system a single perusal of a system of practice will teach him him the connection which diseases have with each other; this is not the purpose of nosology. Is it our aim

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in forming such a system, to assist the practitioner? This is the way in which we shall be most successful. I have frequently had occasion to observe, that where the symptoms are similar, the modes of treatment generally are so likewise. Even according to this plan, indeed, we shall often class together very different diseases, because in their most striking features they agree. Synocha and typhus are classed together, notwithstanding they are very dissimilar in their mode of treatment. But by classing diseases merely according to their symptoms, we shall, I believe, class together a greater number of diseases whose treatment is similar, than by pursuing any other method.

To see into what errors our best nosologist was led by losing sight of this principle, it is only necessary to peruse Dr. Cullen's order of spasmi. It looks like a common receptacle for the refuse of the whole nosology. This order is ready to receive every disease that is rejected by the others. Where is the similarity between hydrophobia and diabetes, between cholic and hooping cough, between dyspnœa and epilepsy, &c.? It may

may be affirmed, I believe, that there is no person unacquainted with Dr. Cullen's peculiar opinions, who can point out for what reason these complaints have been classed together. If he was at a loss where to arrange any disease, it was only necessary for him to call it a spasm, and it found a place in one of the chief orders of his nosology.

No attention to symptoms of diseases, perhaps, will enable us to form a perfect system of nosology. The difficulties are far greater than at first sight they appear to be, but there is reason to believe, that, by steadily pursuing this plan, we may approach more nearly to such a system than has hitherto been done. If this plan is confessedly the best, ought we not to proceed on it as far as we can, and when we meet with difficulties which cannot be overcome, point them out, and leave them to be removed by future observation, rather than give our systems the appearance of being complete, at the expence of truth, or of proceeding on a principle which can be of little or no use either to the student or the practitioner. However ingenious, nay however just a theory may be,

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it should have no place in a system of nosology, which is a mere classification of terms, whose sole objects are to give accurate definitions of the names of diseases, and class together those definitions which most resemble each other.* To return from this digression.

The acute rheumatism is defined by Dr. Cullen,

A disease from an external and for the most part an evident cause, fever, increased by external heat, pain about the joints, shooting in the direction of the muscles, and occupying the knees and other large joints rather than the joints of the hands and feet.

The first part of this definition is exceptionable. The causes of diseases should never be introduced into a nosological character, except where they are very evident, and the diagnostic symptoms are insufficient to distinguish the disease. Besides, what is here said of the cause of rheumatism is true of so many diseases, that it cannot characte-

* See the General Introduction.

rise

rise any one. Dr. Cullen seems to have introduced this part of the character to assist in forming a diagnosis between rheumatism and the pains of gout, syphilis, and scurvy. On the diagnosis of rheumatism I shall presently have occasion to make some observations. The branch of the sentence, indeed, considered in itself, is inaccurate, a disease from an external and for the most part an evident cause; if in some cases the cause of the disease is not evident, how do we ascertain that it is always external? The remaining part of the definition will be found sufficient to characterise the acute rheumatism.

SECT. I.

Of the Symptoms of Acute Rheumatism.

THE symptoms of acute rheumatism, like those of the other phlegmasiæ, may be divided into local and general. The seat of the pain in acute rheumatism is various, sometimes it is confined to one joint, more frequently it attacks several at the same

time.

time. For the most part it is not confined to the joints, but often shoots along the muscles from one joint to another, so that we talk of the rheumatism in the leg or thigh as well as in the hip or knee.

The rheumatism, as mentioned in the definition, generally attacks the larger joints; the shoulder, elbow, hip, and knee, and very frequently the wrists, are the chief seats of the pain. It affects the head and trunk as well as the limbs. The muscles of the neck, back, breast, and abdomen, are very subject to it. It has received various names according to the different places affected; when it attacks the muscles of the neck, it has been called torticollis; when those of the chest, bastard pleurisy, which I have just had occasion to notice; when the muscles of the loins, it has been termed lumbago; when those of the hip, ischias or sciatica. But when the rheumatism is confined to these parts, it is generally unaccompanied with fever, so that the foregoing terms express species of the chronic, not of the acute rheumatism. Vogel observes, that in young people the rheumatism most frequently

frequently attacks the head, breast, scapulæ, shoulders, and hands; in adults and old people, the back, hips, and thighs.

Rheumatic pains are much increased on the slightest motion requiring the action of the muscles affected, which is one of the best diagnostics of the disease, so that when this disease affects many of the joints, and it is not uncommon for the acute rheumatism to seize on every joint of both the upper and lower extremities, the patient lies on the back with the limbs extended, enduring extreme pain, and unable to make the least motion.

When the disease remains fixed in particular joints, we look for a more obstinate disease than when it moves from one to another, which is the usual case, sometimes repeatedly attacking the same joint.

The pains are most severe and most apt to shift their place in the night time. Sometimes they regularly abate in the morning with a gentle sweat, suffering a considerable exacerbation towards evening, for during the day the patient often feels himself tolerably easy.

The disease, however, does not always take this course, and the pains are sometimes as severe in the day or even more so than in the night.*

After the pains have continued for some time, a degree of swelling appears in the parts most affected. This in many cases is moderate and confined to the joints, but Stork, in his Anni Medici, says, that he has seen the whole body tense and swelled. With the swelling there is generally some degree of redness, and the part is painful to the slightest touch. Sometimes even the weight of the bed-clothes is intolerable, so that it is necessary to support them over the patient's body.

The redness and swelling generally bring some relief to the pain. They seldom, however, entirely carry it off or prevent its returning to the part with as great violence as before. The pains are generally the last symptom which leaves the patient. They often begin to abate about the eighth or tenth day, but generally continue with more

* See Dr. Millar's Account of the Diseases of Great Britain.

or less severity to the thirtieth or fortieth. Sometimes they continue for months or even for years. It is uncommon for patients to feel themselves free from pain before the twentieth day.

The foregoing symptoms are from their commencement attended with fever, the pulse being frequent, full, and hard. Sometimes the fever, sometimes the pain, is the first symptom, but the one never continues long without being accompanied by the other. The former generally begins with chills, succeeded by much heat and thirst. It is proportioned to the violence of the local symptoms. When the pain is not very severe, and is confined to one part of the body, the fever is slight. When it is severe, and felt in several parts, the fever is more considerable, and it is most so when the pains extend over the whole body.

The fever, like the pain, generally suffers an exacerbation in the evening, and a remission towards morning, especially when a degree of sweat comes on at this time.

The face, especially during the exacerbations, is red and somewhat swelled, the

urine high coloured, sometimes depositing no sediment, at other times, particularly in the morning and when there is much sweating, one of a white or a reddish colour, and the passage of the urine frequently occasions some degree of burning pain in the urethra.

Nausea and vomiting rarely occur. The same may be said of delirium; the patient, however, is sometimes affected with a kind of stupor, although the pain and other symptoms generally prevent sleep during the first days.

I have already had occasion to observe, that the febrile symptoms abate sooner than the local; the former are rarely protracted beyond a fortnight or three weeks, and often cease sooner. While the fever abates, the pains generally become less violent and are less apt to change their place.

Rheumatism differs from the other phlegmasiæ in very rarely terminating in any other way than by resolution, so that the prognosis is chiefly collected from the state of the febrile symptoms. Some authors, indeed, mention cases in which abscesses were

were formed. It does not very clearly appear, however, whether or not in these cases the rheumatism was complicated with other diseases. Nor does it frequently happen that collections of effused fluid take place in the pained part. Stork, indeed, influenced probably by his hypothesis, observes, that if the rheumatic fever cease, and the swelling of the limbs subside suddenly, the matter formerly dispersed over the whole body is collected in one place and forms large lymphatic tumors, which generally occupy the knees, hips, groins, or shoulders. This must be rare; for Dr. Cullen remarks, "if we may be "allowed to suppose that such effusions are "frequent, it must also happen that the "effused fluid is commonly reabsorbed, for "it has seldom happened, and never indeed "to my observation, that considerable or "permanent tumors have been produced, or "such as required to be opened, or have "the contained fluid evacuated."

Rheumatism seldom terminates by a critical evacuation. It is common indeed for a sweat to break out and continue for a day

day or two, but it is often partial, seldom flows freely, and still more rarely brings any permanent relief. The reader, indeed, will find a sweat mentioned by Lieutaud and others as a favourable crisis of acute rheumatism, and upon the whole perhaps, although rare, it is more frequent than any other in this complaint.

The pains have sometimes remitted on the appearance of an eruption on the skin. Various hemorrhagies, the epistaxis hæmorrhois and others, and the menstrual discharge, have sometimes brought relief.

"A diarrhœa," Dr. Millar observes, "is "an unusual symptom in acute rheumatism; "when it happens, the pain generally abates, "and the fever sometimes degenerates into "one of the putrid malignant kind."

The acute rheumatism may be said almost always to terminate in the chronic, as the pains, we have seen, generally remain for a considerable time after the fever.

The prognosis in the complaint is generally good. It is collected nearly in the same way as in the common synocha. Danger is only to be apprehended when the excitement

excitement is very violent, and does not yield readily to the proper remedies.

As the disease is usually protracted for a considerable length of time, and anti-inflammatory measures make the chief part of the treatment, it often leaves the strength much exhausted. Irregular pains, attended with a dry cough and night sweats, are sometimes the consequence. For the most part, however, they are readily removed by an attention to diet and proper medicines.

With regard to the diagnosis, the complaint which has been most frequently confounded with rheumatism is that we are next to consider, the gout. The ancients, indeed, seem to have made no distinction whatever between the gout and rheumatism, describing them both under the common name of arthritis; so that the term rheumatism is scarcely to be met with in their works. Trallis affirms, indeed, that the term was wholly unknown to them. It is used, however, by Celius Aurelianus, and some others, who do not apply it however in the same way in which we do, for they still confound together the gout and rheumatism.

matism. So much did the ancients consider these complaints the same, that Aritæus says of the arthritis, it is a general pain in all the joints; in the feet, called podagra; in the hips, ischias; in the hands, chiragra. Even to this day in many parts of Europe the diagnosis between these complaints is but ill understood. It will be readily understood after the reader has been made acquainted with the symptoms of both complaints. The rheumatism has also been confounded with the pains which occur in scurvy and lues venerea, from which however it may for the most part be readily distinguished, by the accompanying symptoms of these complaints and the diagnostic symptoms of rheumatism above pointed out. I have already had occasion to observe, that rheumatism is sometimes confounded with nephritis, and to notice the symptoms which generally serve to distinguish them. But rheumatism, when it is confined to the muscles of the loins, is generally a chronic complaint, and therefore not likely to be mistaken for nephritis.

The diagnosis between the symptoms occasioned

occasioned by a calculus in the kidney without inflammation, and the chronic rheumatism seated in the muscles of the loins, is sometimes so difficult, that even Boerhaave in his own case was deceived. They are chiefly to be distinguished by the vomiting, frequent and painful micturition, and stupor of the inferior extremities, which generally attend the former, and the great increase of pain which attends the action of the muscles of the loins in the latter.

Fevers of various kinds, we have seen, are accompanied with severe pains of the back and limbs, which are often with difficulty distinguished from acute rheumatism, particularly when the excitement runs high. Neither Hippocrates nor Celius Aurelianus, Dr. Millar observes, have distinguished rheumatism from remitting fevers. The diagnosis in this case is chiefly to be collected from the relative violence of the symptoms and the particular seat of the pain. When the febrile symptoms are considerable compared with the degree of pain, and the latter not particularly fixed in the

the joints, the complaint must be regarded as a case of simple fever. When, on the other hand, the pains, particularly of the joints, are the most urgent part of the complaint, and the fever seems to increase or abate according as they are more or less severe, the case is then the acute rheumatism; for in this, as in the other phlegmasiæ, the general arises from the local affection. Besides, the pains which attend fever are not so much increased on motion as rheumatic pains are. The increase of pain on motion is the diagnostic of rheumatism most extensively applicable.

Ballonius, in his Treatise de Rheumatismo et Pleuritide Dorsali, is the first author who has accurately distinguished rheumatism.*

SECT. II.

Of the Causes of Acute Rheumatism.

ALL except the very young or very old are subject to acute rheumatism. Those

* Both Sir John Pringle and Dr. Millar say, they have been able to find no earlier account of this disease at all accurate.

between

between the age of puberty and thirty-five, Dr. Cullen observes, are most subject to it.

The same habit predisposes to rheumatism as to other inflammatory complaints. The plethoric are frequent subjects of it; but I have already had occasion to observe, that the phlogistic diathesis, as it is called, the tendency to inflammation, is not confined to the plethoric. It has been remarked of the rheumatism, indeed, that the cachectic are peculiarly its subjects; and it is an observation of Ballonius, that those who have laboured under putrid fevers are frequently attacked by it. These observations, however, apply only to the chronic rheumatism.

Upon the whole, those of the sanguine temperament and a full habit are most subject to the acute form of this disease.

Rheumatism is more a disease of cold than of warm countries, and in the former it is most common in the colder seasons. Sir John Pringle ranks it among the winter diseases. It was seldom common in the army till after the beginning of the winter months. When the winter is not variable, however, it is more common in the spring

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and towards the end of autumn; for, like the other phlegmasiæ, it is rather excited by vicissitudes of temperature, than the uniform application of cold. All partial application of cold is particularly apt to excite it. There is no means of applying cold so pernicious as damp, especially if applied to the extremities, where the circulation is most languid.

The various causes of sudden plethora above enumerated often prove the exciting causes of rheumatism.

It is remarkable that Sydenham ranks among the causes of rheumatism the use of the Peruvian bark. This is only one of the many prejudices which have prevailed respecting this medicine. It is not to be overlooked, however, that where a tendency to the acute rheumatism exists, it may be increased by the bark, or any other means increasing the vis a tergo.

SECT. III.

Of the Treatment of Acute Rheumatism.

THE treatment of acute rheumatism is very similar to that of the phlegmasiæ in general.

general. It differs from most of these complaints, we have seen, in not being apt to terminate in suppuration or gangrene, which occasions some difference in its mode of treatment.

The treatment may still be divided into general and local. The general treatment in rheumatism does not resemble that of any complaint which has been considered, so much as of the synocha.

In most of the phlegmasiæ, particularly those last treated of, the danger of the inflammation terminating in suppuration and gangrene is such, that, setting aside almost every other consideration, our view is directed towards preventing these terminations; so that it is not uncommon for the patient, after escaping from the phlegmasiæ, to fall into dropsy and other diseases of debility. In the acute rheumatism it is seldom advisable to push general evacuations till the local symptoms are relieved. In this disease the danger proceeds not so much from the local as from the general symptoms.

It is the latter, therefore, that we should chiefly have in view. Thus it is, that the

treatment of acute rheumatism so nearly resembles that of simple fever. However severe the pains may be, if the general excitement is trifling, general evacuations must be sparingly employed. As in the simple synocha, the more powerful of the general means are only to be employed when the general excitement is such as threatens a great degree of subsequent debility.

It is true, indeed, that the appearance of typhus is not so much to be apprehended in the acute rheumatism, as in synocha. But profuse evacuations, besides sometimes inducing other diseases of debility, frequently change the acute into an obstinate chronic rheumatism, which may continue to torment the patient for many years.

It must not, however, be supposed from what is here said, that these means are rarely to be employed in acute rheumatism; the general excitement for the first days of the complaint is often such as warrants even repeated blood-letting. All that I would say is, that in the employment of such means we must attend to the state of the general symptoms, and not regard them as

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in gastritis and pneumonia, as means of allaying the pain. It is not to be overlooked that, from the presence of the local affection, a less degree of excitement warrants blood-letting than in synocha. Sydenham in his early practice seems to have employed blood-letting with the view just mentioned, but he confesses that experience taught him that he had made too free an use of it in rheumatism. And although Dr. Cullen recommends more copious blood-letting in acute rheumatism than seems fully warranted by the experience of others, yet he observes, "that attempt-"ing a cure by large and repeated blood-"letting is attended with many inconve-"niences." Upon the whole, general blood-letting is seldom found necessary in acute rheumatism after the fifth or sixth day, and at no time when the fever is abating, even although the pains should become worse.

Sydenham thought it of consequence in this complaint to let blood from the side most affected; but it would appear from later observation, that in general blood-

letting it is of little consequence from what part the blood is taken.

Catharsis is much recommended in acute rheumatism, and as it tends less than blood-letting to debilitate, it may be used more freely.

Wherever the excitement is so considerable as to demand blood-letting, cathartics should only be employed for keeping the body regular. They are less powerful than blood-letting in diminishing general excitement, and when many joints are affected they may be hurtful by the frequent motion and consequent increase of pain which they occasion.

Catharsis is most useful when the excitement is not considerable. Even a moderate degree of excitement will sometimes prolong the pains; and as cathartics generally remove such excitement, they often bring much relief. The mild saline or mercurial cathartics are the best. As the excitement in this complaint, particularly after the first or second blood-letting, is commonly such as indicates catharsis, there are few cases in which at some period or other it is not proper. In proportion as experience taught Sydenham

Sydenham to employ blood-letting less, it taught him to rely more on catharsis. Stork recommends a cathartic every third day after the excitement has been moderated by blood-letting; but if the blood-letting has not been carried too far, a more frequent use of them is proper.

By some, however, this evacuation, as well as blood-letting, has been carried too far. It has been said that we should employ cathartics till the pains abate. But the fever often leaves the patient while the pains continue severe. Ought we then to reduce the strength by repeated cathartics when there are means more powerful in relieving the pains, and which debilitate much less? When the fever is removed, cathartics, as where blood-letting is employed, are only necessary for the regular expulsion of the fæces; and clysters are preferable to cathartics taken by the mouth, when the patient is much debilitated, or when we are endeavouring to promote perspiration.

Emetics are seldom recommended in rheumatism; some writers think that they

are used with advantage after the excitement is moderated by blood-letting, but nauseating doses are preferable to such as produce vomiting.

The great advantage obtained from sweating in the chronic rheumatism, has induced practitioners to attempt promoting perspiration in the acute. Here we must cautiously avoid heating medicines and external warmth, means employed with much advantage in the former case. In the acute rheumatism we can only employ mild diaphoretics, and guard against exposure to cold.

There are few diaphoretics more powerful than nauseating doses of emetics; and as these at the same time tend otherwise to allay the febrile symptoms, they are well adapted to the case before us. They likewise frequently answer the purpose of cathartics.

Many other medicines have been recommended with a view to promote perspiration, and all are said to have proved very beneficial. Among the chief of these is nitre, which by some practitioners has been given

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in very large doses. Dr. Brocklesby* seems to have trusted the chief part of the cure to this medicine; he gave to the amount of ten drams or more in twenty-four hours, in three, four, five, or six quarts of water gruel. Such quantities, he observes, in three or four days seldom failed wonderfully to relieve the patient, and very often wholly removed the complaint by the most plentiful and profuse sweats; and exhibited in this way, besides its other good effects, he remarks, it often supplied the place of other cathartics. When it produced the most salutary sweats, however, it seldom moved the bowels sufficiently, and then mild clysters were repeated at proper intervals. It is not improbable that Dr. Brocklesby rather exaggerates the success of his practice. Whether it is that physicians have not been able to hit upon means of making such quantities of nitre be retained, that their patients have refused to take them, or that the practice has not been found successful, it is difficult to say; but at present nitre is seldom used very freely in this

* His Account of the Diseases of the Army.

complaint. Dr. Brocklesby's observations deserve the attention of those who practice in similar circumstances, that is, among soldiers who are of a more robust habit and more under command than other patients are.

Camphor has been very generally employed as a diaphoretic in acute rheumatism. Sir John Pringle gave it in combination with the carbonate of ammonia. He sometimes gave the latter without the camphor. Guaiacum and opium have also been recommended with the same view, both of which are very exceptionable, at least till the fever is much abated.

The excellent effects of guaiacum in the chronic rheumatism seems to have led to its use in the case before us.

Opium has been prescribed in this complaint with various intentions besides that of promoting perspiration. Some have given it in the evening with a view to relieve the pains, which, it has been observed, are worse during the night; others with a view to procure sleep; but we have sufficient testimony of its bad effects when

given

given at an early period. Sydenham observes, that more blood-letting was necessary in those cases where opium was used; and Stork remarks, that when we attempt to procure sleep by paregorics, the patient becomes restless and giddy, troubled with distressing dreams and starting during sleep, which, instead of refreshing, seems to fatigue him, the pulse becoming frequent, unequal, and contracted. Van Swieten, Dr. M'Bride, Dr. Brocklesby, and others, make similar observations.

There is still another purpose for which opium has been recommended in acute rheumatism. It has been common with some practitioners to give it after evacuations with a view to restore the impaired strength. Sydenham gave it after the operation of cathartics. And if we were, with Sydenham, to exhibit these chiefly after the violence of the disease is abated, this use of opium would be less exceptionable. If opiates are used at all while the fever is considerable, their operation must be directed to the skin by combining them with other diaphoretics.

The

The Peruvian bark has been found eminently serviceable towards the decline of the disease when the fever returns at intervals, assuming more or less the form of an intermittent.* Some have recommended the Peruvian bark, Dr. Cullen observes, at an earlier period, but it is proper in those cases only in which the phlogistic diathesis is much abated, and where at the same time the exacerbations of the disease are manifestly periodical.

It has been recommended to impregnate the system with mercury in acute rheumatism, but, except used as a cathartic as above mentioned, mercury seems of little service in this form of the complaint. In the chronic rheumatism it is often of service to charge the system with it, but in general so severe a remedy is not necessary.

The diet in acute rheumatism should be the same as in other inflammatory complaints, mild and diluting. And the patient must be permitted to return very gradually

* Van Swieten's Comment. Dr. Millar's Diseases of Great Britain, &c.

to his usual mode of living, that he may not suffer a relapse.

The temperature of the patient's room should be as uniform as possible and rather cool. Some advise that he should be laid in blankets in order to promote perspiration and prevent taking cold. This is more necessary in the chronic rheumatism, where profuse sweating is more frequently employed, and the patient is more susceptible of cold.

Among the local remedies blood-letting holds the chief place. While the pains are general, local blood-letting should never be employed. It is impossible by scarifying one joint to relieve the rest. It is after the fever remits, when the pains still continue severe, and fix themselves chiefly in a few of the joints, attended with some degree of redness and swelling, that it is of most service. And as it does not much affect the system in general, it may be repeated as often as the local symptoms become urgent.

Although blisters are less proper where inflammation is very considerable, after it has been to a certain degree reduced, their

effects will be found more permanent. The same observation applies to them as to local blood-letting. It is when the pains are chiefly confined to a few joints that they are to be employed; at an early period indeed, when the pains are general and the pulse hard, they may do more harm than good.

Rubefacients often relieve the pains, but in general when driven in this way from one joint they are apt to attack another. Fomentations are also of service after the fever has abated. The actual cautery has been employed, and is still recommended by some practitioners on the Continent in certain cases of rheumatism. This remedy, it may safely be affirmed, should be banished from medicine: its effects may always be obtained by less formidable means.

What has been said on former occasions respecting the encouragement of the symptoms found critical in the phlegmasiæ, is applicable here. If a tendency to sweating shews itself, it is to be encouraged by every means that do not tend to increase the febrile symptoms. We are also to favour any

any tendency that may appear to hemorrhagy. If an eruption brings considerable relief, we may for a day or two discontinue the evacuating plan; but if the eruption appears without bringing relief, it should occasion no change in the mode of treatment. It is observed above, that the drying up of ulcers has sometimes occasioned rheumatism as well as the other phlegmasiæ; when, therefore, this complaint terminates in any kind of ulceration, we must not attempt to heal it too suddenly.

CHAP. XIX.

Of the Gout.

THERE are few complaints of more importance, or on which more has been written, than the gout; and there is none, perhaps, on which so much has been said to so little purpose. A thousand treatises have promised certain means of removing it, and an unanswerable explanation of its phenomena; but on examination it has constantly been found, that the former were fallacious,

and

and the latter merely hypothetical. It is true indeed, that although we can very rarely attempt the cure of the gout, experience has greatly improved the mode of treatment in it, by pointing out how far and by what means relief may be obtained without endangering life. But to those who know how great a number of works has appeared, particularly in late times, with the express view of unfolding its nature, it will appear a strange assertion, yet it is a just one, that however much the history of this disease may be improved since the revival of literature, all our reasonings respecting its nature, all our theories concerning its proximate cause, are as unsatisfactory as the neglected hypotheses of the ancients. The treatment improved rapidly as soon as physicians began minutely to attend to the progress of the disease; and the account which Sydenham has given of its symptoms has been of greater service in extending the knowledge of the gout, and consequently improving the practice in it, than all that ever was written for the purpose of elucidating its nature.

Dr.

Dr. Cullen defines the gout,

An hereditary disease arising without any evident cause, but preceded for the most part with some unusual affection of the stomach; fever, pain of the joints, most frequently attacking those of the hands and feet, particularly the joints of the great toe, returning at intervals, and often alternating with affections of the stomach or other internal parts.

It might be objected to this definition, that it does not very accurately include all the varieties of gout; it would be difficult, however, to give a better definition of a disease which assumes so many forms. It points out most of its striking features, and seems exceptionable only in the first clause, for a reason given when we were speaking of the definition of rheumatism.

Dr. Cullen divides the gout into four species, the regular, atonic, retrograde, and wandering, which seem with sufficient accuracy to include its different forms. Other writers have divided it into more or fewer varieties.

D. Cullen defines his first species,

Gout

Gout, with a sufficiently strong inflammation, continuing several days, and gradually receding, with tumor, itching, and desquamation of the part.

The atonic gout is defined, that in which there is a loss of power in the stomach or other internal part, either without the usual inflammation of the joints, or with only slight and transitory pains in them, often suddenly alternating with dyspepsia or other symptoms of atony in some internal parts.

The retrograde gout is that in which the inflammation of the joints suddenly recedes, and is immediately followed by atony of the stomach or other internal part.

Wandering gout is that in which there is an inflammation of some internal part, the inflammation of the joint either having not appeared at all, or suddenly receded.

It will be proper to consider the symptoms of each of these species separately.

SECT. I.

Of the Symptoms of Regular Gout.

SYDENHAM has given so full and accurate an account of the regular gout, that it

it is impossible to make any considerable additions to it. Later writers indeed have generally given a literal translation of it; and those who profess to detail the symptoms of gout from their own observation, have added little or nothing to Sydenham's account of this disease, and often use his very expressions. This observation applies even to Dr. Cullen's account of it. The following account of the regular gout, therefore, is to be regarded as Sydenham's, interspersed with the few observations furnished by later experience.

The gout sometimes makes its attack very suddenly, particularly in those in whom it has not formerly appeared, or who have suffered but little from it; the violent pain being the first symptom that gives much uneasiness. In general, however, the inflammation of the joint is preceded by various symptoms indicating a want of vigour in different parts of the system. The patient is incapable of his usual exertions either of mind or body, becomes languid, listless, and subject to slight feverish attacks, especially in the evening, in which shivering

often alternates with flushings of heat. He frequently complains of pains in the head, and coldness of the extremities. In short, all the symptoms which indicate derangement in the organs of digestion, occasionally appear. The appetite is impaired; the patient complains of a disagreeable taste in the mouth, and a sense of deficiency referred to the region of the stomach, as if it were wanting; with frequent vertigo, particularly on rising suddenly. There is an unusual heaviness after meals, which often becomes a disturbed kind of sleep, to which the patient is more or less subject at other times, particularly when the mind is slightly engaged while the body is at rest. He is never refreshed by this sleep, nor is his sleep during the night undisturbed, but such as leaves him languid and uneasy. Along with these symptoms, he is subject to flatulence, acid eructations, heart-burn, spasms of the stomach, thirst, nausea, and vomiting. The bowels are seldom regular, being either costive, or too much relaxed, often in consequence of part of the food

remaining

remaining undigested and running into the acetous fermentation.

The state of mind in the different stages of the gout is as various as that of the body. At this period in general the patient is extremely irritable, and constantly anxious, often without being able to determine very well the cause of his uneasiness. He is alarmed at the least appearance of danger, whether from his complaints or any other source.

These symptoms are often accompanied by others which more peculiarly presage the approaching fit, such as a deficiency of perspiration in the feet, and their veins appearing more distended than usual, cramps of the feet and legs, and numbness and a sense of pricking in them, or a sensation as if cold water were poured upon them, which is sometimes felt in other parts of the body, particularly in the back, and is described as different from the shivering which attends febrile attacks.

The duration of these symptoms, particularly the dyspeptic symptoms before the fit begins, is various; sometimes only a

day or two, at other times many weeks. It is a very general observation, that the day preceding the fit, the appetite is greater than usual.

The fit sometimes makes its attack in the evening, but more commonly about two or three o'clock in the morning. The patient goes to bed free from pain, and is awakened about this time by a very acute pain, generally in the first joint of the great toe. The pain, Sydenham, who was much afflicted with the gout, observes, often resembles that of a dislocated bone, with a sensation as if tepid water were poured on the membranes of the part. After it has continued for a short time, it sometimes extends itself over all the bones of the tarsus and metatarsus, resembling the pain occasioned by the tension or laceration of a membrane; at other times it occasions the sense of weight, and constriction of the part, which at length becomes so sensible, that the patient cannot endure the weight of the bed-clothes upon it, or the shaking of the room from a person walking across it.

At the commencement of the pain, a cold

fit

fit is more or less perfectly formed. As the pain increases, this is succeeded by a hot fit. The pain and fever increase, with much restlessness, till about the middle of the succeeding night; after which they gradually abate, and in the most favourable cases there is little either of the pain or fever twenty-four hours after their first appearance.

As soon as the patient obtains some relief from pain, he falls asleep, a gentle sweat generally comes on before he awakes, and the part which the pain occupied becomes red and swelled.

Although in most cases the patient now enjoys ease, the fit is not over, for the pain and fever return in the succeeding night with less violence, and continue to do so for several nights, always becoming less severe till health is re-established.

Such is a simple paroxysm of the gout. But it often happens that after the pain is abated in one foot, it attacks the other, where it runs the same course as in the part first affected, which in those who have laboured under repeated attacks of the disease,

is often seized a second time as the pain in the other foot subsides, which is again attacked in its turn, and the pain thus alternately occupies the one and the other for a considerable length of time. In other cases it seizes on both feet at the same time.

It appears from what has just been said, that a fit of the gout is composed of many paroxysms, which, in the most favourable cases, the pain being confined to one part, becomes slighter every night. In strong people, Sydenham observes, the whole fit, even although it attacks both feet, is generally finished in about fourteen days. In the aged and those who have been long subject to the gout, it generally lasts about two months; and in those who are much debilitated, either by age or the long continuance of the disease, it lasts till the summer heats set in.

During the fit the bowels are generally costive, the urine is scanty and high-coloured and deposits a copious red sediment, particularly during the first days. Through the whole fit there is a want of appetite and a sense of general heaviness and

and uneasiness, with rigors in the evening. While the fit is going off the patient often complains of an intolerable itching in the parts which the pain occupied, particularly between the toes, from which, and frequently from the whole foot, there is a desquamation of the cuticle.

A fit of the gout leaves the habit in better health than it enjoyed before it. The appetite, digestion, and spirits are unusually good, so that many declare that they would willingly endure a fit of the gout for the good health and spirits which succeed it.

The first attacks of the gout are generally at long intervals, for the most part three or four years; at length they occur annually; in those who have long been subject to it, twice a year, and at last several times during the autumn, winter, and spring. Upon the whole it may be remarked, that the more tedious the fits of the gout, the less severe is the pain, the more urgent are the dyspeptic and other atonic symptoms, and the sooner the fit recurs.

Sydenham admitted no other variety except those described to be regular. When

the gout left the feet or attacked other parts at the same time, he believed the natural course of the disease to be disturbed by debility or some other cause. Dr. Cullen, however, and other later writers, have with great propriety ranked as varieties of regular gout all cases which run the course here described, whether the pain be situated in the feet or other parts of the extremities.

After frequent returns of the gout, it begins to seize upon other joints besides those of the feet, particularly the joints of the hand, and at length the larger joints; and when it attacks the knee and elbow, it often occasions a considerable swelling without any change of colour in the skin, which frequently, however, becomes inflamed. The pain sometimes attacks some of these joints and the feet alternately, and sometimes, though not so often, some of the joints of both the upper and lower extremities at the same time. When the tendency to gout is so great, the fits are long protracted, for it often happens that almost every joint of the body suffers; the pain when it leaves one, immediately fixing in another,

another. In these cases the patient is only free from the disease for a short time in the summer, so that the usual fit may be said to last for eight or ten months.

In the first attacks of the gout the joint soon recovers its strength and suppleness, but after it has recurred frequently, and the fits are protracted for months, the joints remain weak and stiff, and at length lose all motion. These effects are increased by concretions in the joints, which are often thrown out by suppuration, forming ulcers that sometimes prove obstinate. These concretions, however, are not formed in the cavity of the joint, but for the most part immediately under the skin.

I have already had occasion to observe, that as the paroxysms are protracted, the dyspeptic and other symptoms of debility increase, while the pains become less severe. When the fits are protracted for the greater part of the year, the patient is never free from such symptoms, which when the pains either do not supervene, or are very slight and wandering, form the species of gout we are next to consider.

Most

Most people who have suffered long from the gout are more or less troubled with calculous complaints, and the nephritic paroxysms often alternate with the gouty.

Such are the symptoms of regular gout, which although it be called regular to distinguish it from other species of the complaint, is, in fact, most irregular in the violence and duration as well as the return of its paroxysms.

SECT. II.

Of the Symptoms of Irregular Gout.

THE term irregular has been employed to express every kind of gout except that we have just been considering, so that under it are comprehended Dr. Cullen's three remaining species of this complaint, of these the atonic is the most important.

We were not furnished so early with an accurate account of the other species of gout as of the regular. Sydenham describes the former with far less precision. The symptoms of the different forms of irregular gout are so various and deceitful, that an

accurate

accurate account of them could only be expected from the united efforts of many. The reader will find an excellent account of irregular gout, in two treatises published by Dr. Musgrave, De Arthritide Symptomatica and Arthritide Anomale. To save repetition, I shall, along with the symptoms of the irregular forms of gout, mention the causes which make it assume these forms.

To enter fully on a detail of all the symptoms which appear in what is called atonic gout, would be to give those of a large proportion of the complaints to which we are subject. It will be sufficient to enumerate the most striking features of its different forms.

The subjects of atonic gout are generally such as have for some time laboured under regular attacks of the disease; this, however, is not universally the case. In some constitutions the gout soon begins to assume the atonic form. When this form appears in those who have never suffered from regular attacks, it is very difficult to determine its presence, unless the affection of the internal part alternate with pains of the joints;

joints; where, indeed, this does not happen, and the patient has not been subject to regular attacks, some maintain that the complaint is never to be regarded as gout.

The symptoms of the most common forms of atonic gout may be divided into three classes; those it occasions when it attacks the abdominal viscera; when it attacks the thoracic viscera; and when it attacks the encephalon.

Morbid affections of the stomach, such as have already been mentioned as often preceding regular gout, but frequently more severe, are the most common symptoms of the atonic, flatulence, nausea, vomiting, severe pains in the region of the stomach, &c. and these symptoms often prove very speedily fatal. They are frequently accompanied with cramps in various parts of the body, particularly the trunk and upper extremities, which are generally relieved by a discharge of wind from the stomach. The general debility is often very great, the pulse sometimes intermitting, the state of mind anxious, irascible, and timid.

There are few complaints more deceitful than

than what has been termed the gout in the stomach; sometimes, indeed, the pain is excruciating, and the patient dies in extreme agony. But in many instances he expires when the symptoms are not different from those which in ordinary dyspeptics might be pronounced free from danger. It is not uncommon for those labouring under this form of the gout, suddenly to die while they are conversing, and with so much ease, that death is sometimes announced by no other symptom than the head falling on the breast.

Besides the continuance of the gout, all other causes tending to debilitate the system dispose this disease to attack the stomach in particular, the causes which act more immediately on the stomach itself, excess in eating and drinking, a diet of difficult digestion, &c. It is observable, says Musgrave, that such as have an hereditary gout are more liable to attacks in the stomach, than those in whom the gout is accidental; those who are born of old parents, than those born of young; those who have a bad appetite and labour under a cold languid

guid gout, than such as have a better appetite and whose gout is more painful and attended with a greater degree of fever. The melancholic temperament, it is said, also disposes to the atonic gout. How far all of these observations are just it is difficult to say; all that we know certainly is, that the debilitated are more subject to this form of the disease, than the robust.

After the symptoms of dyspepsia have continued for some time, or indeed from their first appearance, they are sometimes accompanied by those denoting derangement in the whole intestinal canal. The patient begins to complain of a pain in some part of the belly, generally about the umbilicus, which gradually extends itself, increasing in severity and accompanied with obstinate costiveness, forming what has been termed the arthritic colic, a complaint of great danger. Sometimes, though more rarely, a diarrhœa comes on, attended with much griping, and sometimes with violent tenesmus and bloody and dysenteric stools.

The functions of the abdominal viscera are seldom so much deranged without other

parts

parts partaking of the disorder. In the arthritic colic the patient is often troubled with dyspnœa and cough, and with a sense of oppression and heaviness in the breast as if a weight lay on it.

The arthritic colic and diarrhœa frequently make their attack in autumn, and continue to harrass the patient during the winter, who, at length quite emaciated and exhausted by the continuance of the disease, sinks under it.

These different affections of the intestines often succeed each other, both the diarrhœa and dysentery in particular are apt to supervene on the colic; and when in such cases the diarrhœa is moderate, it often proves a favourable termination of the latter; but where the bowels are much weakened it is attended with great danger.

It is not difficult to conceive how dreadful a complaint dysentery supervening on a gouty colic must often be. In many profuse hemorrhagies succeeded by extreme debility, coldness of the extremities and syncope suddenly destroy the patient. On examining the intestines in such cases we frequently

frequently find ulcers and abscesses in different parts of them.

The most frequent causes of such affections in gouty habits, are the unguarded application of cold, and the presence of much bile and other irritating matter in the alimentary canal.

All these affections of the stomach and bowels are for the most part accompanied with slight and irregular gouty pains in some of the joints, which, when they become more fixed and severe, often bring very sudden relief to the more internal complaints; so that these affections often alternate, as I have myself observed, protracting the fit for many months, the prognosis being more favourable according as the pains of the joints are more and the symptoms of debility less considerable.

Such are the disorders which atonic gout occasions in the abdominal viscera. In the thoracic, its effects are often no less distressing and dangerous.

After the sudden application of cold, or receiving into the stomach any thing of difficult digestion, a gouty patient will sometimes

sometimes become restless and uneasy, cold sweats breaking out, the countenance becoming pale, and the pulse weak and intermitting. These symptoms are often succeeded by a fit of palpitation, or the pulse failing altogether, he falls into syncope.

As these affections come on, the pains of the joints, if there are any, abate, and without speedy assistance the patient often expires.

The gout sometimes appears in the form of asthma, particularly in those who from a bad confirmation of the chest or from being of asthmatic parents are disposed to this complaint. The asthma from gout, like the common asthma, is either dry or moist, the latter being least dangerous. They are both speedily removed by the coming on of gouty pains.

There is a complaint of the chest, termed a gouty defluxion, which resembles peripneumonia notha, frequent in old people who have been long subject to the gout and in whom it does not return in very regular fits. This affection is occasioned by the same causes which produce pneumonia, and

 whatever

whatever else occasions the gout to assume the atonic form, that is, every thing which tends to debilitate. The expectoration in this complaint is at first thin and scanty, becoming afterwards thicker and more copious, oppressing the lungs, and sometimes even occasioning suffocation.

This disease of the lungs frequently returns at intervals, beginning with a troublesome cough. A cough, indeed, is a very frequent symptom of atonic gout, even where the lungs are not the chief seat of the disease. It often precedes the other symptoms.

Affections of the lungs in those who have long laboured under gout, sometimes assume the form of the phthisis pulmonalis.*

It remains to make some observations on the effects of the gout when it attacks the encephalon. It then produces head-ach, giddiness, palsy, and apoplexy, sometimes loss of memory, and even mania. It is not uncommon for head-ach and giddiness, accompanied with a florid countenance, noise

* See Musgrave's Treatises.

in the ears, a large pulse, and dyspnœa, for some time to precede palsy and apoplexy, and in a gouty habit, unless these symptoms are removed by the appearance of some other form of the complaint, they generally end in this way, sometimes after continuing for weeks or even months.

An indulgence in full living and indolence, especially after the meridian of life and where the habit is inclined to corpulence and plethora, particularly disposes to this form of the gout; and in common with other cases of atonic gout, it may be occasioned by all the causes of debility.

Besides these effects of the atonic gout in the three cavities, it sometimes assumes other forms. The arthritic quinsey often seizes the patient while he is labouring under pains of the joints, and sometimes makes its appearance a short time after a regular fit. This form of the gout approaches more nearly in its nature to the regular gout. It sometimes supplies the place of a regular fit, and is succeeded by the same health and cheerfulness, and it more frequently than

other forms of atonic gout, if it deserves that name, terminates in a regular fit.

The people most subject to gouty quinsey are those with short necks and relaxed and debilitated habits. It attacks men about the middle period of life, and women after the menstrual discharge ceases. More fever precedes the quinsey than other forms of irregular gout. If, says Dr. Musgrave, from whose treatise this account of the gouty quinsey is taken, nausea and sickness of the stomach, heaviness, numbness, and wandering pains, have preceded this disease, there is reason to believe that it proceeds from the presence of gout in the habit, especially if the patient has formerly laboured under regular fits of the disease.* In all these circumstances the reader will observe the gouty quinsey is still found to resemble a regular fit.

The pains in the back, loins, shoulders, and external parts of the head, in gouty habits, resembling rheumatism, and which certainly partake much of the nature of

* See the Rev. Mr. Warner's Account of his own case of gouty quinsey.

that

that complaint, Dr. Musgrave considers as symptoms of atonic gout. The pain sometimes fixes itself in the back, resembling a fit of the gravel, and is seated in the backbone and its membranes. This form of the gout seldom appears except in those exhausted by old age and the long continuance of the disease.

There is also a gouty ophthalmia as well as quinsey, which is known in the same way and terminates in a similar manner with the latter complaint.

Erysipelatous inflammation of the surface and impostume seem also occasionally to serve the purpose of a regular fit of the gout.*

In short, there is no complaint to which gouty people are subject that does not shew some connexion with this disease. The gouty humour, says Musgrave, sometimes falls on the glands within the orbits of the eyes, causing a discharge of sharp serum. Sometimes it attacks the gums and membranes surrounding the roots of the teeth.

* Musgrave's Treatises, Dr. Gardener on the Gout and Gravel.

The nose, the lips, the tongue, and every part of the body, he observes, are subject to attacks of the arthritic matter. Dr. Whytt,* of Edinburgh, remarks, that he has seen the atonic gout in the form of diabetes, hemiplegia, mania, itching of the scrotum, dysuria, discharge from the urethra, and pain in the testicles. Every physician has met with similar affections connected with gout, the connexion appearing by their suffering a considerable abatement, or wholly disappearing as soon as the gout shews itself in the extremities.

The more inflammatory of the foregoing affections may be thought more properly to belong to the misplaced gout, but this is a point of little importance.†

I have already had occasion to observe, that it is the opinion of many, that the gout never shews itself for the first time in the atonic form. The best observations I have met with in opposition to this opinion,

* See the 3d. vol. of the Essays and Obs. Phys. and Literary.

† See Dr. Cullen's Observations on the Gouty Affections of the Bladder and Rectum.

are

are those of Dr. Clark, in a paper on Anomalous Gout, in the third volume of the Essays and Observations Physical and Literary. The atonic gout, he maintains, will often remain for many years without any appearance of regular gout having preceded it. If so, it is of consequence to determine its presence, because the treatment is in some respects different from that of the complaint which it resembles.

Although Dr. Musgrave notices the appearance of atonic gout without any previous attack in the extremities, he does not attempt any diagnostic of such cases, but seems to think that their nature can only be ascertained by the appearance of regular gout.

Dr. John Clark, father to the author of the above paper, regarded white ropy semi-transparent filaments floating in the urine as a diagnostic symptom of atonic gout, when it appears without having been preceded by an attack in the joints. To this symptom the author of the paper adds strangury, which he met with in a large majority of such cases, and he thinks it a

peculiarity of this strangury that it is generally relieved by blistering the ancles; but Dr. Whytt observes, that the same means relieve the slight strangury which frequently attends fevers. Dr. Clark remarks, that the matter thrown up from the stomach in cases of atonic gout, is generally a whitish gelatinous pituitous matter. Gonorrhœa in men, and the fluor albus in women, he thinks, are frequent appearances in this form of gout. Sauvages mentions the gonorrhœa podagrica among the species of gout.

Both Dr. Clark and Dr. Whytt think the atonic gout more common, especially among young people, than is generally supposed.*

After all that has been said on the subject, however, as the symptoms of atonic gout seem to be merely those of debility in some of the organs, and as debility in any part of the system may proceed from a variety of causes, it is probable we shall never detect any diagnostic sufficient to

* The reader may consult the case of Mr. Alexander Small, surgeon to the ordnance in Minorca, related by himself, in the sixth volume of the Medical Observations and Inquiries.

distinguish

distinguish such cases with certainty, where the gout has not previously appeared in a less equivocal form. Besides, it is to be observed of atonic gout, that, if we except disorders of the stomach, an organ which so eminently sympathises with every part of the system, all the symptoms peculiar to this form of the disease, those of asthma, palsy, apoplexy, &c. are generally produced by the same causes which occasion these complaints in ordinary cases; the only difference is, that in gouty habits a less powerful application is sufficient, and even the dyspepsia of gouty patients is always observed to be most severe in those who are exposed to the peculiar causes of this complaint. It seems, therefore, that were we to adapt our language to the real state of our knowledge, instead of talking of the translation of gouty matter to the stomach, thorax, head, &c. in the various cases of atonic gout, we should only say, that the gout gives a predisposition to certain complaints, which being excited may occasion the gout itself in the same way that almost any derangement of the system will excite

almost

almost any complaint to which it is peculiarly disposed. Nor need it surprise us, that the appearance of regular gout relieves the atonic symptoms. How frequently does one complaint subside on the appearance of another, where gout is in no other way concerned; and particularly a disease of debility when a painful disease supervenes. We often remove apoplexy and syncope by pain artificially excited. I have seen symptoms of dyspepsia and a sense of much debility suddenly relieved by a severe fit of tooth-ach.

On the symptoms of the remaining forms of gout, the retrocedent and misplaced, a very few words will be sufficient.

The retrocedent gout only differs from the atonic by being preceded by part of a regular fit.

The propriety of regarding what is termed the misplaced gout as a species of the complaint, is doubtful. It is unnoticed by Sydenham and many other writers. If the inflammation of the internal part come on without being preceded by any affection of the joints, how are we to determine that it is

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at all connected with gout. If it supervenes on the inflammatory affection of the joints suddenly receding, it may still proceed from other causes, for many of those most apt to occasion a retrocession are also such as frequently excite visceral inflammation; so that it would not seem surprising if, in a few instances, such inflammation supervenes on a sudden retrocession of the gout, although there be no connexion between the complaints. Besides, if during a fit of the gout a visceral inflammation should by any cause be excited, we must suppose, from what we see in other cases, that it would relieve or wholly remove the affection of the joint. And instances of misplaced gout seem even rarer than from these circumstances we should expect to find them, even on the supposition that the gout has no share in producing them. It would appear upon the whole, therefore, that all we are to understand from misplaced gout is a visceral inflammation supervening in a gouty habit, to which, however, gout seems little, if at all, to predispose.

Although Dr. Cullen admits this species of

of gout, he confesses that he never met with any instance of it in his own practice, nor found any case distinctly marked by practical writers, except that of pneumonic inflammation. I am inclined to believe, that in this exception Dr. Cullen alludes to the pneumonia mentioned by Dr. Musgrave as a symptom of irregular gout. But what he says of it is not very favourable to the supposition of misplaced gout; for it would appear from his observations, that arthritics subject to pneumonia are such as must, independently of gout, have been predisposed to this complaint.

When the gout does not shew itself till late in life, it seldom rises to the same degree as when it appears more early, and it is less frequently accompanied with nephritic and other symptoms of irregular gout, as indeed might, a priori, be supposed, since the system is generally subject to gout for sometime before these symptoms shew themselves,* most of them being nothing more

* See a paper, intitled a New Pathology of the Gout, by Stahl, in the sixth volume of Haller's Disp. ad

more than symptoms of other diseases to which the continuance of gout predisposes.

There is no general rule, however, without exceptions. The gout, we have seen, is sometimes accompanied with the most dangerous atonic symptoms very soon after its first appearance. This, as we might suppose, is chiefly the case in habits peculiarly disposed to such affections.

SECT. III.

Of the Remote Causes of Gout.

THE gout is a disease of cold and temperate climates. It frequently makes its attack in autumn on the setting in of the cold, more frequently in the spring when the weather begins to become warm, especially if there are considerable vicissitudes of heat and cold.

Those most subject to gout are men of a robust and rather clumsy make, with large

ad Morb. Hist. et Cur. Pert. The reader will find some good observations on the gout in this and another paper by Hahn, in the same volume.

joints

joints and head, a rough skin, rather corpulent habit, and, it has been said, of quick parts; such as have led an indolent and luxurious life, used a large proportion of animal and high seasoned food, and indulged freely in the use of fermented liquors; in short, who have been exposed to the causes which produce habitual plethora, and hurt the digestive organs, as well as those which debilitate the system in general, excessive venery, much application to study or business, vexation of mind, night watching, &c.

The gout more rarely attacks women and eunuchs. When it does appear in them, it is generally in such as are of the habit just described and have been accustomed to indolence and full living.

It has been a common opinion, that the ceasing of the menstrual discharge disposes to gout. But as this happens about the time of life at which the gout is most apt to shew itself in both sexes, and many women have been attacked by it before menstruation ceased, it is probable that it has little share in producing it. Dr. Cullen observes, that he has known several women

subject to gout in whom this discharge was more profuse than usual. As a cause of plethora, indeed, the ceasing of this discharge may in some measure predispose to the disease.

There are few complaints in which an hereditary predisposition is more evident than in gout, and if this complaint appears before the middle of life, it is generally in those whose parents have laboured under it.

I have more than once had occasion to observe, that we can seldom with much accuracy divide the remote causes of diseases into predisposing and exciting. This observation applies to no disease more strikingly than the gout. We constantly find the same circumstance mentioned by one writer as a predisposing, by another as an exciting cause of this complaint. There are none of the causes just mentioned which do not occasionally excite the gout, without the co-operation of any other which we can detect, yet compared with other causes of gout, they may be termed predisposing, because they act merely as such in a large proportion of cases. It will be proper to make

make a few observations on the chief of those causes. On viewing, in general, the people of a country where the gout is prevalent, we find some subject to it from very slight irregularities, while others are exposed to the same or more powerful causes, and yet escape it; and, on enquiry, it is generally found that the fathers or other progenitors of the former had laboured under this complaint. This observation has been so often made by the vulgar, as well as physicians, that there is not a point in medicine better ascertained. Yet, notorious as it is, by some it has been called in question, and has even been made the subject of serious discussion. When we read Dr. Cadogan's fallacious arguments against the opinion of an hereditary gout, and the refutation of them by Dr. Berkenhout and Dr. Falkconer, we are less surprised at the hypothesis of the former, than at seeing the latter authors set about gravely to refute it.

There are few people in whom the hereditary disposition to gout is so strong that it is capable of exciting this disease without the concurrence of some other of its causes,

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so that there are scarcely any sprung, even from the most arthritic parents, who may not escape it by temperance and exercise; and, on the other hand, there are few in those countries where the gout is known, so free from the predisposition that it may not be excited in them by an opposite mode of life.

That indolence predisposes to gout appears from it rarely afflicting those who have followed any laborious occupation. It has often been observed, that although common soldiers are far from leading a temperate life, they are seldom subject to gout; while, on the other hand, professional men, and persons engaged in other sedentary occupations, often find the strictest attention to temperance insufficient to prevent its attacks. It is the indolence of literary men, Dr. Gardener observes, which has given rise to the opinion of abilities indicating a predisposition to gout. There may be some truth in this observation; at the same time long and intense application of the mind seems to deserve a place among the predisposing causes of this disease.

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The bad effects of nightly study, indeed, are partly to be attributed to its encroaching on the hours allotted to sleep.

With regard to the kind of diet which predisposes to gout, although it is granted on all hands that intoxicating liquors, as well as much animal food, predispose to this disease; yet there is great difference of opinion concerning the kind of intoxicating liquors which have most of this tendency. In this country we accuse wine of giving the strongest predisposition to gout, because the lower ranks are little subject to it. In them, however, the tendency may be counteracted by other causes. But there are not wanting less equivocal observations, which seem to prove the greater tendency of wine than beer to predispose to this disease. Van Swieten observes, that when the people of Holland drank malt liquor the gout was hardly known, but has become very common since the introduction of wine. "I will not take upon me to deter- "mine," says Dr. Cheyne, in his Observations and Mode of Treatment of the Gout, "but I believe the fact is, both in the stone

"and

" and acquired gouts, that those who only " drink malt liquors, without wine or " spirits, are seldom violently afflicted with " either."

But what shall we say of such observations when we find them contradicted by others, which seem equally deserving of credit. Liger, professor of physic in the University of Paris, observes, that in Champaign and Burgundy, where the people drink nothing but wine, the gout is hardly known; and Hoffman agrees with this writer, that beer is more apt to produce gout than wine. Liger admits, that sweet wines predispose to this complaint; and it is a very general opinion, that the most acescent wines have most of this tendency. This, however, appears doubtful, for although acescent wines, and whatever else occasions much acidity in the primæ viæ, tend to excite fits of the gout in those who are subject to the disease; yet it seems, from a great variety of observations, that the stronger wines are more apt to give the predisposition. Liger makes the same observation respecting

beer and cyder; the strongest he found most to predispose to gout.

Whatever be the comparative effects of wine and malt liquor in predisposing to gout, it seems to be pretty generally admitted that few liquors have so much of this tendency as cyder and perry; but in this perhaps authors still confound the causes most apt to excite the fit in those who are subject to gout, with those which predispose to it.

It seems in general to require a combination of the two last mentioned causes, indolence and intemperance, to produce gout where there is little hereditary disposition to it.

Where the hereditary disposition is strong, very slight circumstances are capable of exciting the complaint, nor can the strictest attention to temperance always prevent its appearance. Proofs of this we see in our own country; and we are told of people who use almost solely a vegetable diet, generally drink water, and attain an old age, and, notwithstanding are greatly afflicted with gout.*

* See Prosper Alpinus Med.

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When we consider how constantly symptoms of dyspepsia precede fits of gout, and that every cause which weakens the digestive organs seems to predispose to this complaint, it will appear more than probable that the very general use of tea and coffee has contributed, with other causes, to render the gout more general. It is chiefly, perhaps, by affecting digestion that the various causes of debility above enumerated predispose to gout.

Of the occasional causes of gout, Dr. Cullen justly observes, that although physicians have pointed them out with confidence, in a disease depending so much on predisposition they must be uncertain; in the predisposed the occasional causes are not always evident, and in those not predisposed they are often applied without effect.

I have already had occasion to hint, that many of the causes which have been enumerated, if applied suddenly and to a considerable degree, act as occasional causes. A single fit of intoxication, or any other

cause which greatly deranges the digestive organs, may excite the gout in the predisposed.

The following are the causes of dyspepsia, which seem more peculiarly to belong to the exciting causes of gout: Exposure to a moist cold air without exercise, acescent food and food of difficult digestion, unusual repletion of the stomach, obstinate vomiting, acids, either vegetable or mineral, taken in considerable quantities, a collection of bile or other irritating matter in the stomach and bowels.

There are many of the occasional causes of gout which less immediately affect the stomach, excessive evacuations of any kind, or a want of habitual evacuations, particularly costiveness or a want of free perspiration. Checking the perspiration suddenly is one of the most frequent causes of gout. Chiefly to this cause, perhaps, is to be attributed the returns of gout in spring and autumn, when the weather being variable the perspiration is most apt to suffer a check. In some the feet almost constantly sweat; when this is the case, immersing them in cold

cold water, or otherwise suddenly cooling them, is a frequent occasional cause of gout. An external injury done to any of the joints liable to gout, often excites it in the predisposed. The truth is, that every cause which suddenly affects to a considerable degree either the general health or the part which the gout occupies, may excite a fit. The passions and even the imagination may occasion fits of gout. A piece of bad news has often had this effect. A late professor of the practice of medicine, it is said, often began to cripple as soon as he began to lecture on gout.

Some respectable writers believe the gout to be in some degree contagious. Both Boerhaave and his commentator Van Swieten are of this opinion. As the gout is so common, however, the opinion must have been more general were there any foundation for it.

SECT. IV.

Of the proximate Cause of Gout.

THE hypotheses concerning the proximate cause of gout, like the specifics held

out as never-failing remedies in it, are endless: like these, too, their pretensions are universally ill-founded, and they have all done more harm than good. I shall not, therefore, spend time by entering on any consideration of them. It will be sufficient to enumerate some of those which have been most prevalent.

None has prevailed so generally as that which supposes the gout to proceed from the presence of some morbific matter in the blood. What this matter is has been a fruitful source of dispute. Some assert that it is the natural fluids of the body changed by putrefaction or become viscid; others that it is a bilious humour; some that it is a mucilage; others that it is a tartarous or urinous salt; by some it is supposed to be an earth; by others a volatile alkali; by others an æther; some maintain that it is the superfluous part of the chyle; and others that it is an acid. This last opinion has been long prevalent, and many regarded it as confirmed by the experiments of Scheele on urinary calculi; for at one time people persuaded themselves, without looking for any proof

proof of their opinions, that the matter of urinary calculi and gouty concretions was the same, and that the presence of this matter was the cause, not the consequence of gout. It would be attended with little advantage to enter into a detail of the arguments which render both these opinions improbable. It is sufficient to know that they are founded wholly on hypothesis. And with regard to all the foregoing opinions respecting morbific matter as a cause of gout, it is only necessary to make such general observations as render it probable that the gout does not proceed from morbific matter of any kind, and certain that no person has proved it to do so. This the reader will find done in the 529th paragraph of the First Lines of Dr. Cullen.

Dr. Cullen is more successful, however, in refuting the opinions of others respecting the proximate cause of gout, than in establishing his own, which he gives in the following paragraph.

After premising some observations, for which I refer to his work, as by keeping in mind the history of the gout above delivered,

livered, the following passage will be sufficiently understood without them, he continues, "In some persons there is a certain "vigorous and plethoric state of the system, "which at a certain period of life is liable "to a loss of tone in the extremities. This "is in some measure communicated to the "whole system, but appears more especially "in the functions of the stomach. When "this loss of tone occurs, while the energy "of the brain still retains its vigour, the "vis medicatrix naturæ is excited to restore "the tone of the parts, and accomplishes it "by exciting an inflammatory affection in "some part of the extremities. When this "has subsisted for some days, the tone of "the extremities and of the whole system "are restored, and the patient returns to "his ordinary state of health." This account of the proximate cause of gout amounts to little. By the operations of the vis medicatrix naturæ we only mean certain unknown changes which take place in the system, and which are so termed because they seem to conduce towards the restoration of health. Let us substitute the meaning

ing of the term operation of the vis medicatrix naturæ, in Dr. Cullen's account of the proximate cause of gout, for the term itself, and we thall find it changed into little more than a concise account of the progress of the regular form of the disease.

The same observation applies to what he says of the nature of irregular gout.

Various other hypotheses have been advanced concerning the proximate cause of gout. It has been said to arise from a vitiated state of the nerves; to be an attempt of nature to recover the infantile permeability of arteries closed up by exercise; to be a spasm of the alimentary canal, communicated to the extremities. In short, there is no end to hypotheses concerning the nature of gout, and every new one is just as unsatisfactory as those which preceded it; so that all we are taught by the volumes which have been written on the proximate cause of this disease, is the great obscurity of a subject which has wholly eluded the researches of so many.

SECT.

SECT. V.

Of the Treatment of the Gout.

THE gout is very generally regarded as an incurable disease, so that the view in regular practice is rather to palliate than remove it; for notwithstanding all that has been said on the effects of diet and exercise, if we except a few cases where the predisposition is very inconsiderable, we shall find, that these means have failed to prevent the returns of the gout, however much they may have mitigated its severity. It is true that we are possessed of means capable of preventing the returns of the paroxysm, but what is the invariable consequence! I shall have occasion to call the reader's attention to these in speaking of the different specifics which have been recommended in this complaint.

But however incurable the gout may be, we shall find that there are means capable of obviating, perhaps, any predisposition to it, provided the disease has not actually appeared, or only slight symptoms have shewn themselves.

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We shall consider the treatment of gout in the same order in which the symptoms were detailed.

1. Of the Treatment of the Regular Gout.

The symptoms of gout, it appears from what has been said, differ in some very essential particulars from those of the other phlegmasiæ, particularly in their constantly returning, however carefully the exciting causes are avoided, and in their giving a tendency to more alarming complaints. The same circumstances influencing the principles on which the treatment of gout is conducted, render them very different from those which regulate our practice in the other phlegmasiæ. In a paroxysm of the gout it is not our chief aim to remove the inflammation; this indication, indeed, is often wholly overlooked. The objects we have chiefly in view are, so to remove the paroxysm that the succeeding interval may be as long as possible, and that any tendency to atonic gout may be obviated, the danger in gout proceeding neither from the local affection

affection nor the general excitement, but from the paroxysm becoming frequent and irrregular.

At the same time the debility left by a severe fit seems itself to dispose to irregularity, and the distress occasioned by it is so great that we are called upon to alleviate the patient's sufferings as far as can be done with safety. Some, indeed, have asserted, that the means of diminishing the pain are not only safe, but, by rendering the paroxysms less debilitating, tend to prevent the atonic forms of the disease. This maxim, however, is to be admitted with much caution; it is only in certain cases and to a certain extent that it can be reduced to practice.

The constant tendency of gout to recur, and at length to assume the atonic form, renders the advice of the physician as necessary after, as during the paroxysm. Our aim is still the same, that of prolonging the interval, and rendering the succeeding fit regular.

Such are the principles on which the treatment of gout is conducted. It appears from

from what has been said, that during the paroxysm two indications present themselves, which so far stand in opposition, that they cannot both be fulfilled to any considerable extent. If we use vigorous means for the relief of present suffering, we endanger the future health; if we attend to the latter only, we have it but little in our power to mitigate the former. As we cannot hesitate which plan to adopt, all that is necessary in laying down the treatment of a regular paroxysm of gout, is to enquire what the means are which mitigate the sufferings of the patient, and tend at the same time to insure, or at least not to endanger, his future health.

These means, like those employed in the other phlegmasiæ, are either general or local.

In the first place, of the general means employed during a paroxysm of regular gout.

A physician, who had been accustomed to practice in the phlegmasiæ and never seen a gouty patient, would not hesitate in a regular paroxysm to recommend evacuations very freely. He would soon, however, perceive

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his error. The inflammatory symptoms, indeed, would be relieved, perhaps wholly removed; but if the practice were persisted in as often as the fits returned, they would sooner or later be succeeded by a more alarming train of symptoms. "Sin autem, "in paroxysmis subsequentibus phlebotomia "jugiter utatur, podagra quam citissime "etiam in juvene inveterascet, et intra "paucos, latius imperium, seu potius "tyranidem propagabit, quam alias in multis "extendere valuisset."*

There are few points in the treatment of gout concerning which practitioners are better agreed than the employment of blood-letting in the regular gout. Dr. Williams speaks as if it had been otherwise in America at the time his treatise was published (1774). But all European physicians, if we except a few of little note, (who seem very erroneously to regard the gout as of the same nature as the other phlegmasiæ) give nearly the same opinion of it which Sydenham gave above one hundred years ago. Blood-letting, therefore, he observes,

* Sydenham De Podagra.

is neither to be employed for preventing or alleviating the paroxysms of gout, at least in those who are advanced in age. For although the blood drawn during a paroxysm of the gout, like that drawn in pleurisy and rheumatism, shews the buffy coat, yet blood-letting is as pernicious in the former, as it is beneficial in the latter. If blood be drawn in the intermission, he continues, there will be much danger of another paroxym making its appearance, which will last longer, and be accompanied with worse symptoms, than the preceding. Yet Sydenham admits, that if the patient be young and heated by the immoderate use of fermented liquors, blood-letting may be employed at the commencement of the paroxysm.

Many late writers,* although they keep these maxims of Sydenham in view, have ventured to extend blood-letting at the beginning of the paroxysm to those cases where the habit is full, the excitement great, and the local affection very consi-

* Boerhaave, Van Swieten, M'Bride, Liger, Cullen, Cadogan, &c.

 derable.

derable. "Sydenham," says Dr. Cullen, "has given it as his opinion, that the more "violent the inflammation and pain, the "paroxysms will be the shorter, as well as "the interval between the present and next "paroxysm longer; and if this opinion be "admitted as just, it will forbid the use of "any remedies which might moderate the "inflammation, which is to a certain degree "undoubtedly necessary for the health of "the body. On the other hand, acute pain "presses for relief, and although a certain "degree of inflammation may seem abso-"lutely necessary, it is not certain but that "a moderate degree of it may answer the "purpose. And it is even probable, that in "many cases the violence of inflammation "may weaken the tone of the parts, and "thereby invite a return of the paroxysms." Dr. Cullen therefore concludes, that in the first paroxysms in the young and vigorous, general blood-letting may be practiced with advantage, although it cannot with safety be frequently repeated.

Most of the authors just alluded to seem to have recommended blood-letting too freely,

freely, and it seems, indeed, to be daily more and more going into disuse; so that even in the cases mentioned by Dr. Cullen many object to it, experience seeming to evince that the habit often suffers least when the course of the paroxysm is least disturbed.

Most of the best writers on this disease have condemned the use of cathartics in it. Some, Cheyne, Hoffman, M'Bride, Cadogan, &c. recommend mild cathartics, but Sydenham declares, that even the mildest employed during the paroxysm tend to render it irregular. Boerhaave and Lieutaud make similar observations. Dr. Cullen makes no mention of them, and the Rev. Mr. Warner and others, who speak of their own cases, say they have experienced the worst effects from them, so that catharsis, it would seem, is more pernicious in the paroxysm than even blood-letting.

I shall presently have occasion to make some observations on the use of cathartics during the interval, at which time they have been chiefly recommended. In the mean time it may be observed, that it is

common to exhibit a cathartic immediately after the paroxysm. This practice has chiefly arisen from a belief that catharsis at this period carries off the dregs of the disease; but it is found so far from having this effect, that it often renews the paroxysm. Sydenham confesses, that this opinion induced him to take a cathartic immediately after a paroxysm, the consequence of which was that he immediately fell into another.

There are only two circumstances which at this period seem to call for the use of gentle laxatives. Irritating matter sometimes accumulates in the alimentary canal during the paroxysm, which now and then occasions griping and diarrhœa; in which case a mild cathartic with dilution is generally proper. This should be kept in view during the paroxysm, that the stomach and bowels may not be so loaded as to render a cathartic necessary at this period. Cathartics have also been recommended for the purpose of removing an œdematous swelling of the feet, which sometimes comes on as the paroxysm declines. Gentle stimulating laxatives are the best for this purpose. The

swelling, however, generally goes off without any remedy; and it is at least proper to wait till we see whether it is about to do so before so doubtful a one is resorted to.

It often happens, that the bowels are costive during the paroxysm, which in many cases, we have seen, is protracted for a considerable time, so that some means of moving them is necessary. Although nothing but necessity should induce us to prescribe cathartics, there is no objection to the use of clysters. The mildest are the best, as our only view in employing them is the regular evacuation of the fæces.

There is some difference of opinion concerning the employment of emetics in the gout. Some think they are serviceable at the commencement of the paroxysm. Dr. M'Bride recommends some of the mildest to be given with wine if the patient is languid. Upon the whole, however, it seems to be the general opinion, that unless the stomach is loaded, this remedy is at least unnecessary.

Diaphoretics have been esteemed more useful in the intervals than during the paroxysm. The benefit derived in the pa-

roxysm, however, from a gentle spontaneous sweat coming on towards morning, has induced many to recommend diaphoretics at this period. Dr. Cheyne observes, that after the fit is distinctly formed, particularly in complicated and tedious cases and when the patient is advanced in life, they are serviceable. Boerhaave, Van Swieten, Liger, Dr. Caverhill, and many others, are advocates for diaphoretics, especially when the paroxysm has arisen from any cause which tends to check perspiration. But it may upon the whole be observed, that much benefit has not accrued from this practice, and it is very generally laid aside. Sydenham even apprehended danger from it, although he considers an increase of perspiration safer than most other evacuations during the fit. He thinks, that increasing the gentle sweat which generally takes place during the remissions of the pain, or supporting it longer than it is inclined to flow, renders the disease more violent; and he justly observes, that bringing out a sweat in this disease is rather the province of nature than the physician. The effects of

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a spontaneous sweat, and that excited by art, I have frequently had occasion to observe, are often very different.

There has been much difference of opinion concerning the use of opiates in the paroxysm; for although there are scarcely any who think them altogether safe, some recommend small doses. Sydenham and Quinsey are among the authors who have given opiates most frequently in this disease. They were still given, however, as a dangerous remedy. If the pain, says the former, is severe, the patient ought to keep his bed, and be contented with this remedy. If, however, it greatly exceed his patience, he may take a small dose of opium in the evening.

There is no writer who has bestowed such unlimited praise on opium in the gout, as the Rev. Mr. Warner. This author, not belonging to the faculty, and, indeed, betraying his ignorance of the present state of medicine in every part of his treatise, would deserve little notice, were it not that he suffered so much from gout in his own person and gave opium so fair a trial. Dr.

 Falckoner

Falckoner justly censures him for the confidence with which he speaks of its effects from a single case, which he probably would not have done had he been better acquainted with the different effects of the same medicine in different habits. I must refer the reader to his treatise for the facts on which his opinion is founded, and the manner, according to him the only proper one, of preparing the anodyne. A safe medicine, capable of relieving the torments and shortening the paroxysm of gout, is a great desideratum. And should Mr. Warner's anodyne prove innocent, it will be an invaluable addition to the remedies at present employed in this disease. The chance, however, is much against it, whether we regard the observations of very many writers, or the well known effects of opium in other cases. Nor is it to be overlooked, that Mr. Warner died very soon after the publication of his treatise.

The bad effects ascribed to opium exhibited during the paroxysm of the gout may be reduced to two heads, its occasioning the paroxysm, after a few hours of relief, to

to return with great violence, and its favouring, by the debility it induces in the organs of digestion, the appearance of atonic gout. Dr. Cheyne tells us, that by occasioning nausea and reaching, it is apt to bring the gout to the stomach. And Hoffman gives us the case of a gouty patient, who died suddenly after finding relief from this medicine. Many similar observations might be quoted.

From the tendency of opiates to induce the atonic forms of gout, they have been generally judged safer in the young and those who have been lately attacked by the disease, than in old people who have been long subject to it. Dr. Caverhill observes, that when the paroxysms are very violent an opiate may be given to the young who have lately laboured under the gout, but if it be given to the aged they become subject to palsy, apoplexy, and fever. On the other hand, it is chiefly in the young that opium is apt to renew the paroxysm with so much violence, an effect, though sufficiently distressing, less dangerous than the former. It is to be observed, however, that

a repetition of this must at length terminate in the atonic forms of the disease.

Dr. Cullen seems to have overlooked the former tendency of opium, whence he pronounces its exhibition safest in the aged and those who have been long subject to gout. He however observes, that in young arthritics opiates may be given with advantage, after the force of the fit is broken, when the pain only returns during the night and prevents sleep; and the observations of others seem to support his opinion. Liger, and some others of less note, Dr. Bennet, Dr. Williams, &c. seem not to admit even of this use of opiates, but their objection does not appear to be founded on observation.

Such are the general remedies recommended in a paroxysm of regular gout. The reader must observe from what has been said, that it is seldom we have occasion to employ any of them to a considerable extent. The opinions of authors respecting them, however, have been so various, that a pretty full discussion of them was necessary. Before leaving the general treatment, it

it will be necessary to make some observations upon the diet during the paroxysm.

Sydenham long ago pronounced the dieta tenuis the proper diet in a fit of the gout; and in the generality of cases physicians still agree with him. It is for the most part found safe to moderate the excitement by a spare and diluent diet, and this is necessary when the patient is of a strong full habit, has not suffered much by former attacks of the disease, and has not been in the habit of using much wine or other fermented liquors, and when the inflammatory symptoms, both local and general, run high. But, on the other hand, when the patient has lived freely, when he has long been subject to attacks of the gout, especially when these have shewn a tendency to become irregular, when the system has fallen into a state of debility, or when the inflammatory symptoms do not run high, a low diet is improper. Under these circumstances the patient should be allowed a certain quantity of wine proportioned to his habits, and his food should be partly animal.

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If he dislikes solid food, he should use broths.

In cases of much debility some recommend the food to be seasoned with aromatics and strong peppers. But although it is surely the safest plan to support the excitement wherever there is any chance of the inflammation receding or becoming too languid, yet the stimulating regimen has doubtless been sometimes carried too far.* Disputes naturally lead to extremes. Respecting many parts of the treatment of gout there have been so many disputes, that few writers can be wholly relied on.

The diet during the paroxysm must be regulated by the age and habit of the patient, his usual mode of living, the length of time he has been subject to gout, the frequency of its attacks, the symptoms of former paroxysms and those under which he now labours, particularly the degree of general excitement and that of the pain and other local symptoms. If these circumstances are kept in view, we shall seldom be

* See Dr. Cadogan's Treatise on the Gout.

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at a loss to determine what diet will best support that degree of excitement which is most favourable in the gouty paroxysm.

We are now to consider the local means employed during the paroxysm. Concerning these also there has been much difference of opinion, and we shall find upon the whole, that like the measures we have just been speaking of, few of them can be employed with safety.

There was a very early prejudice against local blood-letting in the paroxysm, Whether this prejudice in its full extent is well founded, has not been positively determined. It would seem, that blood may sometimes be taken with advantage from the inflamed joint in the young and vigorous.

Dr. Cullen observes, that when the pain is very acute, he believes that bleeding by leeches in the foot and inflamed part may be repeated with greater safety. I have known instances, he adds, of its having been practiced with safety; but he confesses that he cannot determine to what extent it may be carried. Hoffman recommends it freely, and Dr. Gardener and others follow

him.

him. But they talk of it in so general a way, that it is evident their observations are not the result of experience.

From analogy it would seem, that local blood-letting, indiscriminately employed, must often prove a dangerous remedy; and its having been very generally abandoned, notwithstanding the relief it brings, is a sufficient proof of its having been found hurtful. The frequent repetition of it is particularly to be avoided, and it must not be attempted in the aged and those whose constitutions are already broken by the disease.

Many applications to the inflamed joint, for the purpose of mitigating pain, have been proposed. They have, however, been so often productive of bad effects, that Sydenham, Hoffman, and others most conversant with the gout, have, with the exception of flannel, almost universally condemned them. It will be necessary, however, to notice those which have been most generally recommended, and particularly such as are still in use.

"Blistering," Dr. Cullen observes, "is a

"very

"very effectual means of relieving and dis-"cussing a paroxysm of the gout, but has "also frequently had the effect of rendering "it retrocedent." What is true of blisters is, with little change, true also of synapisms. The relief obtained by them in regular fits is always at the risque of producing worse forms of the disease. The same observations apply to the practice of stinging the part with nettles; applying to it various aromatic oils, mixed with camphire or different kinds of soap; various preparations of opium; euphorbium, boiled with wax and oil; various balsams; spirituous liquors alone, or with camphire, &c. The reader will find an instance, related by Hoffman, in which the external application of spirituous liquors repeatedly relieved the pain, but proved fatal. It is almost unnecessary to enumerate more of these applications. Every thing of a highly stimulating nature tends to relieve the pain, and seemingly, in proportion as it has this effect, to render the gout irregular. Quick-lime and even arsenic have been recommended, the last is the basis of Dr. Pitcairn's recipe for the

the inflamed joints. Hot bricks are recommended by some, which are less exceptionable, perhaps, than any of the foregoing applications. Sometime ago an application, which was said to relieve the pain and shorten the fit, made much noise at Paris. This has since been found to be nothing more than diluted muriatic acid. For the mode of using it the reader may consult Dr. Rowley's Treatise. Dr. Stukely, in a letter to Sir Hans Sloan, recommends rubbing the joints affected with warm oil, prepared in a particular manner. We are not informed of the mode of preparing it, but a variety of oils, that of cinnamon, of cloves, of mustard seed, &c. have been used by others in the same way, and as they are all now laid aside, they must have been found either useless or hurtful.

Oiled silk has lately been much celebrated as an application to gouty joints. This the reader will find recommended by several writers, particularly by Dr. Caverhill, who is in some degree whimsical in the effects he ascribes to it. The oiled silk is said to increase the pain, although it shortens the paroxysm,

paroxysm, when the inflammation is superficial; it is when the pain is deep-seated, we are told, that it brings most relief. It is sometimes applied alone, at other times over the flannels, and generally occasions a profuse perspiration in the part. Some, who are afraid of most other applications, think this may be employed with safety. Analogy, however, is much against it; and it is very generally laid aside in this country. By some it has been thought useful to increase the perspiration of the sound foot as well as the gouty.

No external application in gout has made so much noise as one used in the East and termed Moxa. It is the down of the artemisia, the mugwort. Sir William Temple, who used it in his own case, gives us an account of the manner of applying it. It is formed into a small cone, which is placed with its base on the inflamed part. The apex is then set on fire, and the cone continues to burn till the whole, or nearly the whole, is consumed.

"Upon the first burning," Sir William Temple observes, "I found the skin shrink

" all round the place, and whether the " greater pain of the fire had taken away the " sense of the smaller or no I could not " tell, but I thought is less than it was. I " burned it a second time, and observed the " skin about it to shrink and the swelling to " flat yet more than at first. I began to " move my toe, which I had not done " before, but I found some remains of pain. " I burned it the third time, and observed " still the same effects without, but much " greater within, for I stirred the joint " several times with ease, and growing " bolder I set my foot to the ground with- " out any pain at all. After that, I had a " bruised clove of garlic laid to the part " that was burned, and covered with a " large piece of diapalma to keep it fixed " there." He then walked with ease, " For " the pain of the burning itself," he observes, " for the first time it is sharp, so " that a man may be permitted to complain." He counted, he observes, six score and four as fast as he could during the burning of the moxa, and with the burning the pain of it ceased. The second burning was not so painful

painful as the first, and the third much less painful than the second. The wound was not raw, but appeared scorched and black. In a short time a blister arose, which left a small sore that soon healed.

Sir William Temple afterwards repeated the application of the moxa with similar success. Van Swieten gives an account of the same operation, also performed with success on a person labouring under hereditary gout in Batavia.*

Some have attributed the effects of the moxa to a peculiar quality possessed by this substance, others with more probability to the burning. Sydenham does not speak much in favour of the operation, but thinks it may succeed as well with dry lint. But the effect, he observes, must be temporary and fleeting. Were we sure that even this character of the operation was just, it would be a valuable addition to the treatment in the paroxysm ; but it has not been

* For further particulars respecting the use of the moxa, the reader may consult the first volume of Sir William Temple's Miscellanies, and Van Swieten's Commentary on the 1278th aphorism.

often enough employed to ascertain its safety; and we have every reason, from analogy, to dread the same bad effects from it as from other local applications. Dr. Cullen observes, that he considers the burning with the moxa, or other substances, a remedy of the same kind with blistering. "I have, indeed," he adds, "no evidence of "its proving hurtful, but neither have I "had any proper evidence of its having "proved a radical cure." Upon the whole, it may be observed, it will require a very long experience to establish the safety of any remedy of this kind, for even the most pernicious have been repeatedly employed before their bad effects appeared.

Among other local applications, that of cold has frequently been recommended. This seems to be one of the most successful, and chiefly perhaps on that account one of the most dangerous means of relief.

In the present state of our knowledge it is safest, and consequently best, to abstain from any application to the part but that of flannel or soft new combed wool, which, by tending to open the pores of the inflamed part, and forming a soft bed for it, allay the

severity

severity of the pain; and if the relief they bring be not very considerable, we are assured, from general experience, that it is not at the hazard of greater sufferings.

The only part of the treatment during the paroxysm which now remains to be considered, is the means that have been proposed to strengthen the joint, which remains swelled, stiff, and weak after the pain has abated. They consist solely of such remedies as act immediately on the part, so that they belong to the head of local means. They might, perhaps, with equal propriety, be ranked among the means employed during the interval. Bathing the part with cold water, rubbing with flannel and the flesh brush, and endeavouring to use the joints, are among the chief of these means.

As soon as the pain and inflammation are gone, the flannels may be laid aside, which should not, however, be done carelessly and all at once; and the part dipped several times in the morning in cold water. If the patient complains much of the coldness, a little warm water may be added at first, and gradually diminished till the water is used cold. In the frictions of the joint

some have recommended a variety of stimulating articles to be employed, which do not, however, seem essential. Van Swieten observes, that although he orders the woollen cloths with which the friction is performed to be charged with the fumes of aromatics, yet he has found the same benefit from simple friction, which should be used for a quarter of an hour morning and evening. The only good effects of impregnating the cloths seems to be that of inducing the patient to employ the friction. If with these means he is constantly trying to move the joint, and is not much afraid of a little pain, he will soon walk about again, except the attacks of the disease have been frequent and severe.

Motion of the joint, indeed, has been recommended at the beginning of the paroxysm, with a view to cut short the fit. However successful this practice might be, there are scarcely any who would have sufficient strength of mind to have recourse to it. The reader will find some observations on it in Dr. Caverhill's Treatise. But it is better worth his while to read what Sydenham

Sydenham says of exercise during the fit. Few, however, have resolution to go into a carriage, as he advises, or use even gentler modes of exercise during the fit.

Certain applications to the joints have been recommended as means of restoring the strength without either friction or exercise. Hoffman recommends the volatile sulphuric acid and the balsamum vitæ with Hungary water. The reader will find Dr. James's and other prescriptions of this kind in Mr. Warner's Treatise. Little or nothing is to be expected from any of them.

Nearly the same may be said of the applications recommended when concretions are formed. These have generally been either of an acid or alkaline nature. The diluted marine acid, the fixed alkalis, and quicklime, have been recommended. Van Swieten speaks of the benefit derived from a weak solution of a caustic fixed alkali in very strong terms, both in gouty and other tumors. The reader will find similar prescriptions in Hoffman's Section on Gout. Upon the whole, however, we generally find reason to agree with Sydenham, that

the best means to keep the joints free from gouty concretions is exercise. He even observes, that he has seen such concretions of long standing resolved by exercise alone. When they make their way through the skin, if the habit is tolerably good, the wound generally heals readily with simple poultices.

When the patient is much reduced by the violence of the fit, and recovers his strength slowly, chalibeates and the bark are often serviceable.

Although the spirits and digestion generally become very good towards the end of a fit, yet it sometimes happens, that as the pain abates, some atonic symptoms similar to those which precede it make their appearance. Absorbents and stomachic medicines often bring relief, but unless the symptoms are urgent the fewer of these that are employed the better.

We are now to consider the most important part of the treatment of gout, the means employed during the intervals with a view to render these as long as possible, and

and the succeeding fit mild and regular. Sometimes, indeed, when the predisposition to the gout is not strong, when the patient is young and the disease has only shewn itself in a mild paroxysm, we have it in view entirely to prevent its return. In both cases the means employed are the same.

I have already had occasion to hint that certain medicines have been employed for the purpose of preventing the return of gouty paroxysms even in the most inveterate cases. But a fatal and very extensive experience has convinced physicians of the danger of having recourse to them. After considering the regular treatment in the intervals of gout, it will be proper to make a few observations on the nature and effects of some of these medicines.

Although there are some medicines which have proved both safe and useful during the interval, our chief dependence is on a proper regimen; for much is not to be expected from any medicine we can venture to employ.

In the first place then let us consider the

regimen,

regimen, that is, the diet and exercise during the interval.

What was said of the causes of gout is sufficient to point out the proper diet. The symptoms of the disease, indeed, naturally lead us to that which experience has proved to be the best. We see the fit preceded by symptoms of debility, which points out a nourishing diet during the interval. At the same time we observe that the regular gout consists in a violent inflammation of the joints, by which we are led to avoid the diet which disposes to inflammation. Thus it is necessary to choose a proper mean. If the diet be too low, the fits will not only become more frequent, but will partake more of the atonic forms of the disease. If the diet be too full and stimulating, they will also become more frequent, and the inflammation will be more violent. It is true, indeed, that in this case they will for some time retain the regular form; but nothing is better ascertained than that the frequent repetition of regular paroxysms, especially if they be violent, soon impairs the vigour of the system,

tem, and induces the symptoms of irregular gout.

A proper diet has so long been regarded as among the most material parts of the treatment of gout, that there are few writers on this complaint who do not speak of it at considerable length. There is, however, much difference of opinion respecting it. By some the use of animal food is forbidden; by others it is particularly recommended, and bread and vegetables are condemned as apt to produce acidity. Some have wholly condemned the use of wine, even in those who have been accustomed to it. Others recommend it to all arthritics whatever.

The truth is, it is as impossible to lay down any regulations respecting diet in the interval, as in the paroxysm, which shall be universally applicable. As in the latter case, it must be regulated by the age of the patient, his habits of life, the length of time he has been subject to the gout, the frequency of the paroxysms, and the tendency which the disease has shewn to become irregular.

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When the patient is young and has not been accustomed to intemperance, when he has only suffered one or two paroxysms of the disease and these have shewn no tendency to become irregular, he is then in the most favourable state for attempting a radical cure. His constitution is not yet habituated to the disease, and he can with safety use that kind of diet which has been found best suited to prevent the returns of the regular gout. It seems, from a variety of observations, that this diet consists chiefly, if not wholly, of milk and the more farinaceous vegetables. This, indeed, has been denied, but chiefly, it would seem, from such a diet having been prescribed in improper cases and not with sufficient caution; for a milk diet is so different from that generally used, that even the young have not sufficient strength of constitution to bear the change if made too suddenly. It is only by degrees, and in the space of some months at least, that any arthritic should be permitted wholly to abandon the use of wine and animal food.

Some have thought it sufficient to perse-

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vere in a vegetable diet for a certain time, during which, if the gout has not made its appearance, they judge it safe for the patient to return to his former way of life. But Hoffman observes, that if this is done, the patient either has the fits renewed, or in their stead, particularly in debilitated habits, spasmodic complaints, colics, inflammations of the stomach, nephritic pains alternating with ischuria, supervene, and even death itself is often the consequence.

It is in very few cases, however, that a milk and vegetable diet can be prescribed with safety. When the patient is advanced in life, or has been aecustomed to intemperance, when the vigour of the constitution is at all impaired, or even when the regular gout has frequently returned, it is not to be attempted. But although so great a change is improper, there is none of these cases in which some change is not to be made. If the patient has been intemperate, he must be allowed full living, but warned against any excess either in eating or drinking. If he has only been a full liver, he should be desired to eat and drink

more

more sparingly, particularly to give up the use of animal food in the evening, and, according to Sydsnham's rule, to confine himself to one dish at dinner. He should take only a few glasses of wine, which, if it does not become acid on the stomach, is better than distilled spirits in any shape. We have even reason to believe, I think, that he should prefer the weak wines to the strong, or if he drinks the former dilute them with water. If he finds this mode of life rather increase than diminish his strength, he may gradually accustom himself to drink less wine, till at length, perhaps, he will find that he can lay it aside altogether. But there is not a more dangerous maxim than Dr. Cadogan's, that the change should be made as speedily as possible. There are few physicians who have not seen its fatal effects. Upon the whole, it is a good general rule for gouty patients to confine themselves to one or at most two plain dishes, of which they may eat freely. There will then be little danger of their eating too much or too sparingly. And with respect to drink, it should, perhaps,

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be the view of every arthritic, whose constitution is still vigorous, to bring himself to use water only, or, what has been particularly recommended by Sydenham and others, whey, at least for his common drink.

While fermented liquors remain necessary, although wine is generally to be preferred, yet as it is particularly apt to become acid on the stomach when a fit is approaching, it may then be changed for a small quantity of distilled spirits diluted with water.

Dr. Falckoner has censured Dr. Cadogan for advising, that the diet of gouty patients be composed rather of solid than liquid food, and quotes Haller in support of the opposite opinion. Most dyspeptics, however, will agree with Dr. Cadogan. I have known even the smallest quantity of fluid taken during dinner derange digestion. It would seem, that the gastric fluid having its powers diminished in the dyspeptic, will not admit of any dilution.

Dr. Cadogan has been more justly censured for regarding bread as pernicious. Many arthritics, however, who have been long

long accustomed (as a large majority have) to consume great quantities of animal food with very little bread, complain of its oppressing the stomach and running into the acetous fermentation. But this proceeds not from any indigestible quality in the bread, but from the stomach not being accustomed to it. If the quantity be gradually increased, the arthritic will experience no inconvenience from it. And as it affords much nourishment, without tending to produce the fulness occasioned by animal food, when the stomach can digest it perfectly it should form a principal part of the diet of gouty patients.

Particular objections have been made to much salt, pepper, mustard, vinegar, and all kinds of pickles, and not without reason, for these are hurtful not only by the stimulus which they apply to the stomach, but by inducing the patient to eat more than he ought.

But no attention to diet is capable of prolonging the intervals and preserving the paroxysms mild and regular, if exercise be neglected. When the patient is strong enough,

enough, walking is better than any kind of gestion. Some have recommended more violent exercise, but this is not necessary. When it is employed, the patient must be brought to use it by degrees. It is true, indeed, we have heard of people of strong constitutions wholly cured of the gout by being subjected to much labour and abstinence. There are not a few instances, says Hoffman, of people having lost the gout with their fortunes. Van Swieten tells us of a priest, who was taken by pirates and condemned to the oar for two years, which wholly cured him of the gout he had been long subject to. In general, however, all that we wish is, that the patient should walk regularly four, five, or six miles a day. Walking employs almost all the muscles of the body, and, being a moderate exercise, it can be continued for a considerable length of time. It seems to be on these accounts that it is the best.

In prescribing walking to arthritics who have been accustomed to indolence, they must be warned against fatigue, which counteracts all the benefits derived from it;

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and consequently brought by slow degrees to use a sufficient quantity of this exercise. With regard to those arthritics who cannot walk, or cannot walk enough, they must ride on horseback, or if this is too much, in a carriage. If even this is not to be borne without fatigue, they should undergo morning and evening friction of the whole body, continued till they begin to feel some degree of weariness. Friction of the joints, indeed, while they remain stiff, should in no case be neglected. By these means the weakest arthritic will often be brought by degrees to bear the rougher exercises. It is to be observed of walking, however, that much of this exercise when the fit is expected, may bring it on, especially if the feet are at all cramped or otherwise injured.

The exercise of the mind is also a matter of some importance in the intervals of the gout. Nearly the same may be said of it as of bodily exercise. Any study which fatigues is injurious, and the constant languor of a mind wholly unoccupied is no less so.

The early part of the day is the proper time for the exercise both of the mind and body.

body. Repose towards evening is particularly necessary to invalids. The observations made both on bodily and mental exercise during the interval of intermitting fever, are applicable here.

Some attention to the proper regulation of sleep is also necessary. Boerhaave recommends a great deal of sleep to his gouty patients; and within certain limits a large proportion of sleep is a powerful means of restoring strength. For this part of the subject I may also refer the reader to the chapter on intermitting fever.

Sydenham is among the very few writers who have taken notice of a choice of air in the treatment of arthritic patients. While the patient is using exercise, he observes, a wholesome air is to be preferred. Exercise in the country is better than exercise in the town, where the air is loaded with vapours and rendered still worse by the closeness of the buildings. Many from their own experience can affirm the truth of these observations; and I have known instances in which dyspeptic patients could not with twice the exercise in London preserve the same degree

of health which they enjoyed in the country. It was supposed by many, till the experiments of several chemists demonstrated the contrary, that the air of great cities was less wholesome than that of the country, in consequence of containing a less proportion of oxygen. From many circumstances it would appear, I think, that the unwholesomeness of the air in great cities arises from its greater dampness; for a damp air occasions the same want of appetite, lowness of spirits, and other nervous symptoms in the debilitated, from whatever cause.

The cause of the greater dampness of the air of great cities is evident when we reflect on the experiments on which Dr. Hutton has founded his theory of rain. Every cool breeze much charged with moisture must, by mixing with the heated air of the city, occasion a deposition of water, since it is found that the mean temperature will not enable the airs to hold the same quantity in solution which they do before they are mixed. And, in fact, in what part of this country are the fogs so common and in so great

great a degree as in London. I have myself observed when a sea breeze was passing over the country, that wherever it met with the heated air of a village, a considerable deposition of moisture took place. So that from each village a train of mist, proportioned to its size, extended itself along the country, in other parts of which the air remained perfectly transparent. But admixture of airs of different temperatures is often attended with a considerable degree of dampness, without going so far as to occasion mist, a state of the air to which the delicate are extremely sensible, and which in common language has obtained the name of rawness, partly perhaps from the rapidity with which, on account of its greater density, it abstracts the heat of the body. The bad effects of a damp air cannot be wholly attributed to its abstracting the heat with greater rapidity, since the same effects are not occasioned by a dry air however cold. Nor can a damp air be supposed to affect the lungs materially, which are always moist. The injury it does, seems to arise from the effects of the moisture on the skin,

which in a thousand instances so remarkably sympathizes with every part of the system, and particularly with the stomach. All the symptoms occasioned by a damp air are such as indicate a want of vigour in the skin, and consequently of free perspiration, chilliness, loss of appetite, languor, &c.

Such are the circumstances to be attended to in managing the regimen during the intervals of gout. We are now to consider the remedies which have been found useful at this period. These, like the remedies recommended during the paroxysms, may be divided into general and local. In the first place, of the general remedies employed during the interval of the gout.

The impropriety of employing general blood-letting at this period is so evident, that very few have recommended it. It would rarely have much effect in rendering the succeeding paroxysm milder, and either by weakening the patient if he were advanced in years, it would tend to bring on atonic forms of the disease, or by increasing plethora, particularly in the young, increase the

the violence of the inflammatory paroxysms, and render them more frequent.

Physicians have been more divided in their opinions concerning the use of cathartics at this period. Hoffman thought that they might be employed a little before the accession, for the purpose of preventing the fit, and even observes, that general blood-letting has been successfully recommended with the same intention. Both are certainly very precarious. Cheyne recommends mild cathartics throughout the whole of the interval; Boerhaave and others, even those of a drastic nature; but Sydenham has declared against them all at this period as well as during the paroxysm. There is the same objection to catharsis during the interval as to general blood-letting; of the two, however, it is the least to be dreaded. In modern practice cathartics are only recommended for the purpose of keeping the bowels regular, and those are preferred which occasion least evacuation, aloes, rhubarb, magnesia, &c. The first of these, for reasons which will afterwards appear,

is objectionable in gouty cases, where the constant use of a cathartic is necessary.

Some physicians have been so much afraid of debility during the intervals, that, not contented with abstaining from evacuations, they have endeavoured to support the strength by the Peruvian bark and other tonic medicines. These at first sight appear well adapted to the intervals of gout, but, notwithstanding what many have said of them, they bear too near a resemblance to the specifics which have done so much mischief in this complaint, to be generally employed. The best physicians either do not mention them among the remedies of gout, or speak of them as very doubtful means.

Among the tonics which have been recommended in the interval, cold bathing holds a principal place; but even this is a doubtful remedy, except in the young and vigorous, or at least those who enjoy very long intervals.

The opinions of physicians respecting the employment of the warm bath during the intervals, are various. Sydenham and some others

other of the best writers take no notice of it. The tepid bath, however, it is now ascertained, has not the debilitating tendency formerly ascribed to it, and in those who have become cripples from the gout it is often used with much advantage. No remedy has been so much celebrated in this country as the Bath waters, used both externally and internally, for the purpose of fixing the gout when it shews a tendency to become irregular; and for restoring strength and the use of the limbs after severe fits. It is not easy to ascertain with accuracy how far their reputation is well founded. That they are often of use in such cases is certain. Numberless authors have testified in their favour. The hot waters of Bourbon,* the waters of Aix-la-Chapelle, the Piermont and Seltzer, and many other mineral waters, have been celebrated in the gout, but do not seem equal to those of Bath. Common water impregnated with the carbonic acid gas has been warmly re-

* See a Treatise, entitled Bains de Bourbon, by Dr. Aubery.

commended

commended, and appears to be a good innocent stomachic.

Various remedies of another kind have been employed, which by their diaphoretic or other quality were supposed capable of correcting or expelling from the body the morbific matter to which we have seen the gout so generally attributed. Many of them seem more safe than effectual, and indeed they have so seldom been attended with success, that their employment has not been sufficiently general, perhaps, to ascertain their safety. Among these may be mentioned antimonial and mercurial medicines.

The accounts which Cheyne and others give us of the effects of mercury in gouty cases, speak but little in its favour. "The "fact is," says he, "that by a free and full "salivation gouty people have been freed "from all the symptoms of the complaint "for several years; but it is also a matter "of fact and experience, that a full and "free salivation does so break, rend, and "tear all the smallest, tenderest, and finest "vessels and fibres, that the body becomes

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"in a worse state, in respect to the future "fits, than it would have been in several "years time under the common symptoms."

In the *Observations interessans sur la Cure de la Goute*, and other works, mercurials are much recommended during the paroxysm. But I have not taken notice of them among the remedies of that period, as by the practitioners of this country at least they are very generally laid aside.

The reader will find antimonial medicines recommended by Dr. Cadogan, Dr. Jeans, and others. But it is observed by Dr. Falckoner, that they have been used without advantage, and that their continued use is to be feared, as they tend to hurt the stomach. Even Dr. Jeans says, that in some cases he has seen violent vomiting or purging induced when antimonials were given with a view to stop the fit.

Sulphur, ammonia, and a variety of other diaphoretics, have been recommended with the same intention, and many regard them as medicines of great importance. The general opinion seems to be, that much is not to be expected from them, and they

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will probably be found pernicious in proportion as they hurt the stomach. It appears, indeed, that it was chiefly the hypothesis of morbific matter which first induced practitioners to employ them.*

Such are the general means employed during the interval. Upon the whole it may be observed, that an attention to diet and exercise forms the most essential part of them. It is chiefly, indeed, when the gout has left the strength much impaired, that any thing else is necessary.

It remains to say a few words of local remedies at this period. There are only two which deserve notice, local blood-letting and issues. It was formerly common to apply leeches to or scarify the feet when a fit of the gout is expected, especially if the habit be plethoric, or any

* There is some account of the success of sulphur water in gouty cases, and the mode of preparing it, in the eleventh volume of the Medical Commentaries. A variety of medicines have been employed with a view to prevent a return of the paroxysm. See the first volume of the Acta Reg. Soc. Med. Haf. A paper above referred to, by Dr. Clark, and one by Dr. Guthrie, in the fifth volume of the Medical Comment.

accustomed

accustomed discharge has been checked. How far this practice might prove successful in preventing the recurrence of gout it is difficult to say, for the hazard of all means of this kind has banished them from modern practice.

It is observed, when from the breaking of gouty tumors or other accidents, that ulcers are formed and continue to discharge matter, the intervals of the gout are prolonged and the paroxysm rendered milder without any disposition being given to the irregular forms of the disease. This circumstance suggested to physicians the propriety of making artificial ulcers in the legs, which are sometimes productive of the same good effects. It is necessary, however, for a gouty patient who has once submitted to this remedy, to keep up the discharge for life, as in such habits the worst consequences often follow the closing of issues, or even the drying up of sores, which have continued for a considerable time. In the latter case, indeed, issues should always be substituted for the sore, if this precaution be neglected, the fits frequently become as frequent as they were,

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or more so, and shew a greater tendency to become irregular. It seems to be an observation very generally applicable, that if gouty paroxysms be interrupted for some time, or rendered less frequent, by whatever cause, and in consequence of its removal or other means they recur with their usual frequency, they generally assume a more dangerous form.

Some ascribe the effects of issues to the irritation they occasion, and recommend frequently shifting their place, that the parts may not become callous. Their effects, however, seem in a great measure at least to depend on the evacuation they occasion, and frequently shifting them is very troublesome.

It is hardly necessary to add to what has been said of the treatment during the interval, that carefully avoiding the occasional causes of the complaint forms an essential part of it.

Such is the treatment of regular gout. Every age has tended to simplify it; and most of the numerous train of internal remedies, once so generally recommended in

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this complaint, are now regarded either as useless or hurtful.

Nothing remains to be done before leaving this part of the subject but to make some observations on the principal specifics which have been recommended for the radical cure of gout. There are few of these which are not composed of ingredients which some physicians still venture to prescribe to a certain extent, and many of them are remedies on which the older physicians placed their chief reliance. Such is that which has lately made so much noise in this island from a supposed cure it wrought on the Duke of Portland.

The composition of this medicine is now known, and instead of being new, it is the same which was used in gouty cases as early as the days of Galen, since whose time it has often been in high repute, and as often fallen into disuse.*

What the effects of this remedy are is

* The reader may consult a paper, intituled an Inquiry into the Origin of the Gout Powder, by Dr. Clephane, in the 1st. vol. of the Med. Obs. and Inquiries.

now

now very well ascertained; those who have used it according to the directions have indeed got rid of their gouty pains, but it does not appear that there is one instance of their being removed in this way in which the patient survived the effects of the medicine above a few years.* "I myself," says Dr. Cadogan, "observed between fifty and "sixty of the advocates of the Portland "powder, some my patients, some my ac-"quaintance or neighbours, who were ap-"parently cured by it for a little while, but "in less than six years time they all died "to a man." And Dr. Cullen observes, "In every instance which I have known of "the exhibition of the Portland powder for "the length of time prescribed, the persons "who had taken it were indeed afterwards

* To make this powder, take of the root of that species of bithwort termed aristolochia rotunda, of gentian root, of the tops and leaves of germander, ground pine, and centaury, dried, equal parts, reduce to powder and sift them. A dram of this powder is taken every morning for three months, three-fourths of a dram, or according to some two scruples, for three months longer, and for the ensuing six months, half a dram.

free

" free from any inflammatory affections of
" the joints, but they were affected with
" many symptoms of the atonic gout, and
" all, soon after finishing their course of the
" medicine, have been attacked with apo-
" plexy, asthma, or dropsy, which proved
" fatal."

Although most physicians have wholly discarded a medicine universally productive of the worst effects, yet some, Dr. Jeans, Dr. Gardner, and others, have ventured to recommend it in smaller doses, especially to young arthritics. The ancients laid it down as a rule, that this medicine should not be administered to such as had been subject to gout above six or seven years. Even this is at least a precarious practice, though not more so, perhaps, than the daily use of other bitters and aromatics.

Some believe that these medicines are safer in infusion than in substance. This is probably true, as the former is less powerful; but still it is doubtful if the common use of them in any shape is safe. A circumstance which has not been sufficiently attended to is, that it does not seem to be the

the medicine, but the checking of the gout, that occasions the fatal effects, and it is more than probable, that the use of any medicine capable of preventing the return of the regular fits would be attended with the same consequences. We have every reason to believe, that a person free from the gout might take the Portland powder, not for one year only, but for many years, without fatal effects.

It was observed above, that mercurials have been recommended in the gout. These have formed the basis of some specifics. The famous pills of Belloste are a mercurial preparation. The reader will find many cures by this specific related in the second volume of Belloste's Hospital Surgeon. Yet there is every reason to believe, that mercury is no safer specific in gout than the preceding. We have seen Dr. Cheyne's account of its effects. In the incautious hands of the empiric it is still more to be dreaded. Hoffman relates the most alarming and even fatal effects from a specific of this nature.

There are few remedies in the gout which have had, and indeed with many still have,

much reputation as preparations of the alkalis. From the frequent concurrence of gout and gravel, since alkaline medicines have been celebrated in the latter complaint, they have often been employed in gouty habits, and it is very generally admitted that they prolong the interval, whether with safety or not seems still undecided. We have reason from analogy to dread every medicine having this tendency, at the same time if these act merely by correcting acidity, which we know frequently occasions the gouty paroxysm, they may be less pernicious than those that make a more direct impression on the system.

Many specifics have at different times appeared which had alkalis for their base. It is rather in calculous, than in gouty cases, however, that they have been celebrated. Lieutaud, M'Bride, and other writers, speak with confidence of their effects in the latter complaint. But I have met with no one who bestows on them so much praise as Liger. Dr. Cullen, who wrote since these authors, although he thinks favourably of alkaline medicines in the gout, speaks with

less confidence both of their success and safety.

It has been observed by other writers, that certain alkaline preparations are more hurtful than others. The caustic alkali combined with oils is more pernicious than alkali saturated with carbonic gas. On the other hand, the former preparation is the most effectual.* A long continued use of the alkalis has occasioned a very bad habit of body, much emaciation, and debility.

It appears, I think, from the various observations on this subject, that alkalis may be used with a view to alleviate the symptoms of gout, but ought never to be given in the large doses which some recommend with a view of removing the disease.

It would be spending time to little pur-

* The following is Liger's manner of preparing the alkali in gouty cases. Olive oil is placed in a vessel over the fire, and while it boils, as much of a very pure caustic alkali is thrown into it as is sufficient to form a white mass, which he calls medicinal soap. If there is too much oil, the surplus floats on the surface; if too much alkali, it subsides to the bottom, so that much nicety is not required in proportioning the ingredients.

pose

pose to enquire particularly into the merits of many other medicines of this kind. The effects of all of them are similar. We may therefore permit the spirituous infusion of guaiacum, the Swiss tincture, Dr. Hill's elixir of Bardana, the Liege medicine,* Mr. Drake's specific, &c. to remain in the silence into which they are now sunk. These medicines during the interval (very few of them are recommended at other periods) are like local applications during the paroxysm. Few can be used with safety, and those which afford most relief are most dangerous. Whether or not a more extensive experience will shew that many of these specifics may be given with advantage in small doses, for the purpose of strengthening the digestive organs, to which most of them afford a degree of temporary vigour, seems at present very doubtful.

* This medicine was proposed by Dr. Le Fever, and at one time made much noise. See a pamphlet respecting it by the Rev. Mr. Marshall, and another by Mr. Drake, who was also a proprietor of a gouty specific.

We are now to consider the treatment of the various forms of irregular gout. It is evident that this part of the subject cannot be here entered upon at length, for that would lead to the treatment of almost all the complaints to which an arthritic is subject. All that can be attempted, therefore, is to lay down the general principles on which the treatment of the different forms of irregular gout is founded.

The reader will recollect, that in detailing the symptoms, I adopted Dr. Cullen's division of irregular gout, into atonic, retrocedent, and misplaced. I shall follow the same order in speaking of the treatment of these forms of the complaint.

1. Of the Treatment of Atonic Gout.

By far the most common form of atonic gout is that of dyspepsia. In laying down the general principles, therefore, on which the treatment of atonic gout is conducted, I shall keep this form of it in view, and afterwards make a few remarks peculiarly applicable to the other appearances it as-

sumes.

snmes. This method is more distinct than endeavouring at the same time to lay down the treatment in affections so dissimilar.

From what has been said the reader must perceive, that there are few who have been subject to the gout for a considerable length of time, and yet remain free from the irregular forms of it. During the intervals, even those who have not been long afflicted with the disease are constantly complaining of flatulence and other dyspeptic symptoms. But while these symptoms are moderate, alleviated by a proper attention to diet and exercise, and do not interfere with the return of the regular paroxysms, they do not deserve the name of atonic gout.

It seems at first sight surprising that the prognosis in the dyspepsia of gouty patients should differ so essentially from that in other cases of this disease. We see people of all ages and temperaments afflicted with the most severe dyspepsia, occasioning violent pain, extreme sickness, and even syncope, but still unattended with danger. Other tendencies of the gouty diathesis seem to unravel this difficulty; it exposes, we

have seen, to more dangerous complaints than dyspepsia. When we reflect on the great debility which generally precedes death in gouty dyspepsia, the manner of the death, and the diseases to which the habit is disposed, there can be little doubt of its being occasioned by the affection of the brain, which has been termed nervous apoplexy. Were I to enter at large on the subject of apoplexy, we should find additional reasons for this opinion.

We have two things in view in treating the atonic gout; to remove the symptoms of debility, and to restore the regular fits. It is to be observed, that if we succeed in either of these indications, the other for the most part is answered at the same time.

1. Of removing the Symptoms of Debility in Atonic Gout.

For this purpose Sydenham relies more on regimen than medicines, and justly observes, that all the means we can employ will be of little avail if the patient neglects exercise. A proper attention to diet is no less necessary.

necessary. What I said of these in speaking of regular gout, is applicable here.

Cold bathing has been recommended. There are two circumstances, however, which render it a doubtful practice. It is apt as it were to overpower a debilitated habit, so that on coming out of the water the patient finds himself more anxious and debilitated than before. As much as possible to prevent this, he should be careful to avoid every kind of fatigue before going into the water, to remain in it as short time as possible, and as soon as he comes out to have the whole body rubbed with dry cloths. If by these means he feels no glow of heat, or, although he feels some degree of it, if his appetite and spirits are not rendered better by the bath, there can be no doubt of the impropriety of continuing it. The other circumstance which particularly demands attention in the use of the cold bath, is its tendency to prevent the accession of regular fits, if employed at the time they are about to appear. It is never to be recommended, therefore, if, from pains of the limbs or other circumstances, there is reason

to

to expect a fit. Some, indeed, have been so much afraid of this effect, that they have wholly condemned the use of the cold bath in every form and period of the disease.

There is no irritation more debilitating than that occasioned by the morbid contents of the stomach and intestines, especially if, as frequently happens in the atonic gout, the bowels are at the same time too languid. The means recommended to remove this source of irritation should be of the gentlest kind, and of a warm invigorating nature. It is necessary that the body should be moderately open, but catharsis is hurtful.

It may seem, that emetics, which tend always to weaken the organs of digestion, must be hurtful in atonic gout, and that for clearing the primæ viæ we should trust only to gentle laxatives. This to a certain degree is just. A repetition of emetics would be hurtful, but we shall find that, besides for the purpose of clearing the stomach, an emetic is often useful. When it is judged proper, and the strength of the patient is much reduced, Dr. Musgrave recommends

his

his drinking wine instead of water to promote its operation.

But the medicines which hold the chief place in the treatment of the atonic gout, are those termed stomachic, which consist of cordials, bitters, aromatics, and astringents. It was observed, when we were speaking of the diet during the interval, that most old arthritics require a considerable quantity of wine or other fermented liquors. When the dyspeptic symptoms amount to atonic gout, it is necessary to increase the quantity of wine. Sydenham observes, that after trying many things to remove the languor and debility of the stomach, he found nothing answer so well as a small draught of canary wine taken when these symptoms were most urgent.

But in cases which threaten immediate danger, no wine is sufficiently powerful. In that extreme pain of the stomach, under which gouty patients often expire, two glasses of strong brandy or usquebaugh, or even more, swallowed speedily, are the best medicine. In this complaint a quantity of distilled spirits or strong wine may be drank

drank without inconvenience, which at other times would occasion intoxication. If there is any remedy more powerful in such cases than distilled spirits, it is a large dose of opium, which often brings immediate relief.

I have seen slight pains of this kind removed by applying to the feet as much heat as they could bear, by means of warm bricks wrapped in flannel. And even in more severe cases, if had recourse to as soon as the pain comes on, this may render a smaller quantity of more pernicious remedies necessary.

It is in that form of atonic gout which appears chiefly in debility of the stomach, that the occasional use of bitters is still by many recommended; and if they are ever proper it is in such cases, where considerable advantage may be expected from a temporary use of them. "For strengthening the "stomach," Dr. Cullen observes, "bitters "and the Peruvian bark have been em-"ployed, but care must be taken that they "be not constantly employed for any great "length of time." The bark is astringent as well as bitter. Simple astringents are

safer

safer remedies in atonic gout, and some of them are very effectual. There is none so much celebrated as iron. Musgrave used the rust, which he considered a very powerful means of strengthening the stomach in gouty cases. Dr. Cullen also prefers the rust, others the tincture. With respect to aromatics, they generally enter into the compositions of cordials, and do not appear more apt to hurt the stomach than the other ingredients of such medicines, particularly the distilled spirits. It is to be recollected, that all this set of medicines is only given when necessity demands their use, not without the risque of increasing the future sufferings of the patient.

Issues are serviceable in atonic gout. They seem often in some measure to come in place of the regular paroxysm.

I may here refer to what was said of the Bath and other mineral waters in cases of gouty debility. "After all this manage-"ment," says Dr. Cheyne, "should the "gout still continue in the stomach and "become habitual, nothing but a long "course of the Bath waters, with steel bitters

"bitters and gentle stomachic purges, a "regular diet, and proper exercise, can "effectually remove it.

When the atonic gout becomes obstinate, if there is any means of removing it, it is the change to a warm climate.

Such are the different means employed with a view more directly to strengthen the system; it remains to point out those which tend to relieve the symptoms of atonic gout, by fixing the complaint in the extremities.

I have had occasion to mention emetics, as recommended for another purpose; they have also been found serviceable in this way. The gout after their operation has sometimes appeared in the extremities. It is remarkable, that the very means which are most apt to drive the gout from the joints when it has already fixed itself there, and consequently occasion the atonic forms of the disease, are those which in these forms are found most powerful in inducing the regular paroxysm, namely, local applications to the feet, legs, and thighs, particularly large blisters. If the gout does not

not appear within a day or two after their application, some of the blistered parts should be dressed with issue ointment, which, Musgrave observes, will either bring the gout to the joints, or otherwise relieve the urgent symptoms.

With the same view a variety of rubefacients have been recommended, mustard poultices, bathing the lower extremities with hot wine or distilled spirits in which acrid substances have been dissolved, &c. Some recommend applying rubefacients previous to blisters. The reader will perceive that the use of these remedies requires some caution. If they are applied after any pains have been felt in the joints, which generally indicate a tendency in the gout to fix there, by counteracting this, they may do harm.

Walking is also a means of bringing the gout to the extremities. When the patient is unable to walk, he may go in a carriage, when even this cannot be borne, Boerhaave advises, that he should be kept warm in bed and drink some diaphoretic and aromatic liquor.

While

While these measures are pursued, the means of strengthening the system are not to be neglected, without which the former often prove ineffectual. Drinking a bottle of wine has been known to bring the gout to the feet, when every thing the physician could think of had failed.*

Such is the manner of treating atonic gout when it assumes the form of dyspepsia; and almost every thing that has been said will be found applicable to the other varieties of this species of gout. A very few observations on these will be sufficient.

The gouty, we have seen, are subject to diseases of the intestines as well as stomach, particularly colic and diarrhœa. In arthritic colic all the means just mentioned are proper, but cathartics more necessary. Fomentations of the belly,† and other measures recommended in ordinary cases of colic are to be employed in conjunction with those which tend to fix the gout in the joints.

* See Van Swieten's Commentary on Boerhaave's Aphorisms on the Gout.

† In colic I have seen much relief obtained from flannel, dipt in brandy and sprinkled with black pepper, applied to the belly.

A similar observation applies to the gouty diarrhœa, whether bilious or not. The means we have been considering are to be combined with those employed in ordinary cases of this complaint. If it evidently arises from an accumulation of acrid matter in the intestines, it is necessary to promote the discharge of it by means of a cathartic and copious draughts of thin broth, before we endeavour to check the diarrhœa.

If the stomach is much loaded, an emetic will be of service, both by preventing the further introduction of irritating matter into the intestines, and tending to allay their motion. But when the diarrhœa is bilious, even although there be symptoms of bile in the stomach, emetics should be avoided. In these cases, acids, particularly the vitriolic, are serviceable, by correcting the bile. When the intestines are sufficiently emptied, the diarrhœa must be allayed by astringents and opiates. Musgrave and Sydenham did not hesitate to recommend the latter, though Cheyne and others express fears of them, not however, it would seem, on sufficient grounds.

 Exercise

Exercise of various kinds tends at once to check the diarrhœa and bring the gout to the extremities. If exercise and laudanum fail, says Sydenham, the only remedy I know of is to bring out a sweat, both by external and internal means; if this be done morning and night for two or three days together, and for two or three hours each time, the diarrhœa is generally checked and the gout often fixed in the joints.

When the stools assume a dysenteric appearance, strong cordials and meats are pernicious. The diet must then be mild, and the use of astringents avoided. In such cases the best plan seems to be to excite a discharge of the irritating matter, from which the dysenteric purging generally arises, by mild cathartics, particularly ipecacuanha, in small doses, and then allay the pain and irritation by small and repeated doses of opium combined with a considerable quantity of mucilage.

The treatment of gouty asthma differs from that of the common asthma only in the addition of means for bringing the gout to the extremities.

The

The same may be said of the treatment of syncope in gouty habits, except that the cordials should be of the most powerful kind; they should be given by clyster during the fit, and drank freely during the intervals. There is much danger in attempting to throw any thing into the stomach while syncope lasts; when the patient does not make the effort to swallow, it may fall into the trachea.

In gouty palsy and apoplexy the treatment differs still less from that of other cases of these complaints; for in palsy and apoplexy the means employed for bringing the gout to the extremities are necessary, although there be no gout in the habit, and consequently where there is, serve a double purpose. In many cases of palsy and apoplexy it is difficult to ascertain the propriety of having recourse to evacuations. To point out the various circumstances which here influence our judgment, would lead to too long a digression; but this may upon the whole be observed, that evacuations should be used more sparingly in gouty than in other habits.

When the patient is afflicted with flying pains in various parts of the body, or quinsy, inflamed eyes, tooth-ach, &c. while the common means for removing these complaints are employed, as in the preceding cases, we hope for a cure chiefly by bringing the gout to the joints. The reader will infer from what has been said, that issues are often serviceable in such cases. I have seen the best effects from them.

We are next to consider the treatment of retrocedent gout. This form of the disease is even more dangerous than the preceding, because the means of relief are generally more confined. It would appear at first sight, that as all the danger proceeds from the gout leaving the extremities and affecting some internal part, we should constantly have recourse to the means above pointed out, as tending to bring the gout to the former. But I have already had occasion to observe, that although these remedies often succeed in bringing the gout to the joints when they are wholly free from pain, yet if there be any remains of pain in them, which frequently happens, they

will

will generally render the retrocession more complete, so that it is only when the joints are perfectly free from pain that they can be employed. In other respects the treatment of the retrocedent, resembles that of the atonic gout.

When the stomach is affected, recourse must immediately be had to the strongest cordials, strong wines, or distilled spirits, with aromatics, given warm. The medicines termed antispasmodics have been much commended in this form of the disease. Many give asafœtida, musk, and ammonia, but the medicines of this class most to be depended on are ether, and above all others, opium. If vomiting comes on, it should be encouraged by draughts of warm wine till the stomach is cleared, and then allayed by a dose of opium and camphire. When the pains of the joints suddenly receded, and were followed by oppression, sickness, and vomiting, Sydenham used to drink some diluting liquor to promote the vomiting, and afterwards take eighteen drops of laudanum in Canary wine; he then went to bed and endeavoured to compose himself to rest.

By these means, he assures us, he has often been snatched almost from death.

Musgrave recommends blood-letting in the asthma of retrocedent gout when the patient is plethoric. This remedy, which has often done so much harm in ordinary cases of asthma, is still more to be dreaded here. In short, the usual means employed in asthma must be had recourse to, with this caution, that it is of still greater consequence in a gouty habit to save the strength. A similar observation applies to all the other forms of retrocedent, as well as atonic gout, diarrhœa, colic, apoplexy, palsy, &c.

From what has already been said of the third species of irregular gout, the misplaced, it appears, that the complaints which have been known by this name are nothing more than some of the phlegmasiæ we have been considering, supervening in a gouty habit; and the only thing peculiar to their mode of treatment in such a habit, is, that evacuations must be employed with more caution.

The gout is frequently complicated with other diseases. Its fits then often become remarkably frequent and irregular, and re-

sist

sist attention to diet and other means found in ordinary cases to relieve it. All that can then be done is, as far as the case admits of it, to combine the modes of treatment suited to the different complaints. When they cannot be combined, the most urgent complaint demands our first attention. The presence of each will generally modify the treatment of the other, and much must be left to the discernment of the physician after he is made acquainted with all that can be said of the treatment of both.*

Such is the treatment of the various forms of gout. What has been said of it, particularly of the treatment of regular gout, sufficiently evinces the truth of Hoffman's observation, that this disease does not bear a multiplicity of remedies, and that the practitioner ought to confine himself to a few, the utility of which experience has ascertained.

* For a very peculiar kind of irregular gout, which I do not find mentioned by any author but Liger, and those who mention it from his Treatise, the reader is referred to the 369th page of his work. I have not quoted any part of this account, as it is given in a very vague manner. Liger, indeed, has scarcely treated any part of the subject with precision.

BOOK II.

OF THE HÆMORRHAGIÆ.

WE are now to consider the second order of symptomatic fevers, which has been defined,

Symptomatic fever, in which the local disease is a flow of blood not arising from external injury.

In this order the diseases are so simple and resemble each other so much, both in their symptoms and mode of cure, that it is not necessary to consider them separately. There is one disease, indeed, arranged by Dr. Cullen in this order, (as a sequela of hæmoptysis) which it will be necessary particularly to consider, as it is a disease of more consequence and more complicated, both in its symptoms and mode of treatment, than the diseases with which it is arranged, and indeed has nothing in common with them; namely, the phithisis pulmonalis, commonly called the consumption of the lungs.

In

In treating of hemorrhagy in general, I shall allude to the peculiarities of its different genera.

Dr. Cullen arranges under this order only four genera; the epistaxis, or bleeding from the nose; the hæmoptysis, or spitting of blood from the lungs; the hæmorrhois, or discharge of blood from small tumors about the anus; and the menorrhagia, or a flow of blood from the uterus. To these most authors add the hæmatemesis, or vomiting of blood, and the hæmaturia, or bloody urine. These Dr. Cullen regards as seldom, if ever, primary diseases. Some authors have still added other genera, hemorrhagy from the gums for instance, but this is endless; we might with equal reason regard hemorrhagy from the fauces, the skin, &c. as distinct genera. These rarely occur, and when they do are generally symptomatic. The hemorrhagies I shall chiefly have in view in the following observations are the four genera of Dr. Cullen, and the hæmatemisis and hæmaturia.

CHAP.

CHAP. I.

Of the Symptoms of the Hæmorrhagiæ.

THE symptoms of the hæmorrhagiæ may be divided into those which precede the flow of blood, and those which accompany it.

The symptoms which precede considerable hemorrhagy, resemble those which appear at the commencement of the phlegmasiæ, or indeed of fevers in general. A cold fit comes on, the skin being constricted and the extremities cold, with weariness of the limbs, pains of the back and head, costiveness, flatulence, and other febrile symptoms; and the hot fit, in which the pulse is frequent and full, and in many cases hard, is often formed before the blood appears.

These symptoms are generally most remarkable before internal hemorrhagy. They are very generally attended with a train of local symptoms, affecting the parts from which the blood is about to flow.

In external parts we can often observe some

some degree of redness and swelling, and whether the part be external or internal, the patient often complains of a sense of heat, fullness, and tension, sometimes of weight and pains of different kinds in it and the parts about it. But the local symptoms preceding hemorrhagies, are very various, and differ according to the situation, nature, and office of the diseased part.

Before the appearance of epistaxis, we often observe all the symptoms occasioned by an unusual determination of blood to the head, strong beating of the arteries of the head and neck, flushing and swelling of the face, &c. The whole head, Hoffman observes, is sometimes much swelled, the nostrils being hot and dry.

Hæmoptysis is preceded by affections of the thorax. The patient often complains of a sense of weight, anxiety, and pains about the breast, with some degree of dyspnœa, often of a sense of heat, sometimes under the sternum, sometimes moving from place to place, and a little before the blood appears there is frequently a saltish taste in the mouth. At length a tickling at the top

of

of the larynx, now and then extending itself along the trachea, occasions hawking, which brings up a little blood of a florid colour and more or less frothy. As the quantity of blood increases, there is a rattling noise in the wind-pipe before it is brought up, and then it comes less by hawking than by coughing, which is sometimes the case from the first.

When blood is spit, it sometimes requires attention to determine whether it comes from the lungs, stomach, or fauces. But the manner in which it comes generally indicates from what part the blood flows. If from the stomach, it is vomited, not coughed; if from the fauces or nose, it is often brought up without either hawking or coughing; or if from its falling upon and irritating the glottis, some degree of these takes place, the history of the case and other symptoms will generally point out its source. The blood from the stomach and fauces is generally of a dark colour, and unmixed with globules of air.*

* See the 841st and following paragraphs of Dr. Cullen's First Lines.

In

In the hæmorrhois the blood is seldom, perhaps never, discharged till small tumors are formed about the anus, either externally or on the inner coats of the intestine a short way above the anus. These tumors are more or less distinct. Sometimes there appears a general tumefaction of the anus. The tumors are termed hemorrhoides,(piles); they sometimes continue to tease the patient without discharging blood, and are then termed the blind piles, hemorrhoides cæcæ. But the production of these swellings, whether external or internal, is generally preceded by a variety of symptoms. They often leave the patient, and in a short time again make their appearance, sometimes continuing to come and go at nearly equal periods. Every time they appear, they are for the most part preceded by a similar train of symptoms.

Before the appearance of piles, the febrile symptoms are more frequently well marked than in either of the preceding hemorrhagies. The mouth and fauces in particular are dry, the skin constricted, and the urine at once pale and in small quantity. The local symptoms too are more numerous and varied.

varied. Vertigo, head-ach, stupor, sickness, and other symptoms of dyspepsia, often precede the appearance of piles; and not unfrequently there is a fullness of the chest, with some degree of dyspnœa, often increased by flatulency of the bowels, which now and then are affected with colic pains. There is also pain or a sense of weight and oppression in the back and loins, and the limbs are sometimes affected with a degree of numbness. Along with these symptoms there is pain about the anus, with heat and itching, and often a sense of weight extending to the perineum, accompanied with a frequent desire to empty the rectum and bladder. The stools are sometimes bilious, sometimes mucous, and many, particularly old people, are subject to a prolapsus ani; but these symptoms are rather to be regarded as causes, than merely preceding symptoms of the piles.

The degree of the foregoing symptoms is very various in different cases, generally proportioned to the degree of piles which is to succeed.

A serous discharge from the anus, accompanied with some degree of swelling, now and then precedes the piles, and sometimes comes in place of them and the bleeding, relieving the foregoing symptoms in the same manner as the flow of blood does. This complaint has been called the hæmorrhois alba.

The symptoms preceding the menorrhagia are similar to those which precede the hæmorrhois. As the menstrual discharge is more or less irregular, that is, flows in greater quantity and longer at one time than another in most women, who notwitstanding enjoy a good state of health, every little excess is not to be regarded as a case of menorrhagia. It is only when the discharge is such as to debilitate that it is to be regarded as a disease.

The hæmatemasis, or vomiting of blood, is preceded by affections of the stomach and parts in its neighbourhood. There is often pain and tension of the left hypochondrium and much anxiety, with a sense of tightness in the chest.

Bloody urine is frequently not preceded by

by any remarkable symptom when it is independent of calculous affections. Sometimes pains of the back and considerable uneasiness in the region of the kidney denote its approach.

Such are the symptoms preceding hemorrhagies. All of them, however, especially when they are about to be inconsiderable, occasionally make their appearance without any preceding symptom. The local symptoms most uniformly precede hemorrhagies.

There is a species of hemorrhagy termed by nosologists passive, which is never preceded by symptoms of fever, that is, by any symptomatic of the hemorrhagy. This species Dr. Cullen has properly arranged among the Locales. It either originates from external violence, or is a symptom of diseases of debility, scurvy, typhus, &c. There is nothing to be said of the symptoms of such hemorrhagies, and their mode of treatment will sufficiently appear from what will be said of active hemorrhagies. These, indeed, when the flow of blood induces a great degree of

of debility, may be said to be changed into passive hemorrhagies.

We are now to consider the symptoms which attend the flow of blood. On this part of the subject a very few words will be sufficient. When the fever has been considerable, it generally continues till the blood ceases, or nearly ceases, to flow. The same may be said of the local symptoms, although in general there is an abatement of both soon after the blood appears, especially if it flows freely. There is no hemorrhagy, perhaps, which so constantly relieves the symptoms which precede it, as the epistaxis.

When the loss of blood is great, every part of the body, particularly the face, becomes pale; the patient complains of giddiness and other symptoms of approaching syncope; the pulse becomes weak, and if the hemorrhagy proves obstinate and profuse, ceases altogether, complete syncope coming on. Previous to death, however, the patient falls into convulsions, which may be regarded as the last stage of fatal hemorrhagies.

The quantity of blood lost is various,
 from

from that of a few drops to many quarts; nor is the duration of the complaint less various, from that of a few minutes to weeks or even months. The quantity of blood which may upon the whole be lost, it is evident must depend much on the duration of the hemorrhagy. The blood assumes different appearances, according to the part from which it flows, the time which it has remained in any of the cavities, and the age and habit of the patient. Blood from the lungs is generally more florid than that effused from parts at a distance from this organ. If blood has lain for some time in any of the cavities, the bladder, rectum, uterus, &c. it assumes a very dark colour, and often forms clots, sometimes of so firm a consistence as to resemble flesh. If the patient be young, the blood appears of a loose consistence and full of globules. In middle age, the globules are less numerous and the blood of a more adhesive consistence. In old age it is more thin and watery. In dropsical habits it is also found in this state; and in those labouring under diseases of great general debility, thin and sanious.

When

When the blood begins to flow, if the patient has been well previous to the attack of the disease, it appears in the healthy state, except that it is generally covered with the buffy coat, as in the phlegmasiæ, but becomes thinner as it continues to flow.

The diagnosis of hemorrhagies is sufficiently evident; on the prognosis it will be necessary to make a few observations. In habits much reduced by previous disease or other causes, particularly in those which shew a tendency to dropsy, even a moderate loss of blood may prove dangerous. In advanced age hemorrhagies are more to be feared than in youth and the vigour of life.

But whatever be the habit or age of the patient, if the blood flows profusely, if the lips, nails, and other parts become pale, if the extremities become cold, and the patient fall into syncope, especially if there be any convulsions of the limbs, the danger is very great.

It is not to be overlooked, however, that syncope is often a means of checking hemorrhagies, for as the vis a tergo tending to propel the blood from the vessels is inter-

rupted, or nearly so, in syncope, the blood generally ceases to flow, and during this time the bleeding vessels are often closed, partly by their own contraction and partly by the blood coagulating in them, so that the feeble vis a tergo after a recovery from syncope is often insufficient to overcome these obstacles, and thus for the present the hemorrhagy is removed.

The danger in hemorrhagies, however, is not always proportioned to the loss of blood, as they often indicate the approach or presence of other diseases. Few complaints are less to be dreaded than epistaxis in children; but old people subject to it are in danger of apoplexy. Although the loss of blood by hæmoptysis be very inconsiderable, it is an alarming complaint, because it indicates a tendency to phthisis.

The appearance of the blood in hemorrhagies assists the prognosis. The firmer its consistence, the greater the proportion of red globules; and the less considerable the buffy coat, the less is the danger. The danger is great when the blood becomes watery, and still greater if it assumes a sa-

nious

nious appearance. When we come to speak of the causes of hemorrhagy, we shall find that an attention to them also is necessary in collecting the prognosis. I have already had occasion to observe, that hemorrhagies are apt to return periodically, the prognosis therefore is collected not only from the symptoms while the hemorrhagy is present, but from the state of the patient also during the interval. If he enjoys his usual health, has a good appetite, and does not lose flesh, there is little to be apprehended. But if he is low spirited and indolent, if the appetite fails, and the countenance becomes pale and emaciated, particularly if symptoms of dropsy appear, the danger is very great, unless the return of the hemorrhagy can be prevented.

CHAP. II.

Of the Causes of the Hæmorrhagiæ.

THE remote causes of hemorrhagy, like those of the phlegmasiæ, are very simple. Those of a sanguine habit, slender make,

and delicate constitution, are most subject to hemorrhagy. The robust and laborious are least subject to it, that is, those whose vascular system is most delicate are, as we might a priori have supposed, most subject to ruptures in it. It is also observed, that the places from which hemorrhagies most frequently happen, are those in which the blood-vessels are most numerous, the internal membrane of the nose, the lungs, &c.

Why different ages predispose to different hemorrhagies, it is more difficult to explain. Epistaxis is most common in children; hæmoptysis from puberty to between thirty and forty; hæmorrhois from this period to about sixty; and hemorrhagy from the kidneys and the brain in advanced old age. There is no period of life, however, at which any of the hemorrhagies may not occur.*

When the reader is made acquainted

* Various hypotheses have been advanced to explain the tendency of different times of life to different hemorrhagies, but as they are in general very unsatisfactory, I shall not detain the reader with any account of them.

with

with the occasional causes of hemorrhagy, it will be less difficult to conceive why the changeable weather of autumn and spring should be more favonrable to their production, than the more equal temperature of summer and winter.

There are, perhaps, no diseases which leave behind them so strong a predisposition to future attacks, as hemorrhagies, which seems partly to arise from the ruptured vessels and those in their neighbourhood, in consequence of the distension they have suffered, being left in a state of debility, which occasions a determination of blood to the part, and partly from loss of blood, as I have more than once had occasion to observe, disposing to plethora, the powers of assimilation seeming constantly to prepare a quantity of blood proportioned to the demand for it.

Of all the predisposing causes of hemorrhagies, plethora is the most frequent; all the causes of which consequently may be regarded as predisposing causes of these diseases.

 Almost

Almost all the foregoing causes act occasionally as exciting causes.

It is a common observation, that those hemorrhagies which are caused by mere plethora, are of all hemorrhagies proceeding from internal causes most easily removed, and most frequently cease spontaneously; an observation which might have been made, a priori, since in this instance the disease necessarily removes its cause.

In active hemorrhagy there seems always to be a rupture of one or more small vessels. It has been supposed, indeed, that an increased force of circulation may so dilate the excreting vessels as to occasion an effusion of blood independently of rupture. This, however, appears extremely improbable, especially when we consider that an increased force of circulation tends to invigorate, not to relax. This, indeed, seems frequently to happen in passive hemorrhagies, particularly those which appear in diseases of extreme debility, and which seem to be merely the consequence of extreme relaxation of the vessels and tenuity of the blood. The remote causes of active hemorrhagy

morrhagy are all such as tend to occasion a rupture of the vessels. They all occasion a turgescence in the part from which the blood is about to flow. If the vessels yield without being ruptured, inflammation takes place. Hence some degree of inflammation always precedes active hemorrhagy. When a rupture happens in any of the vessels of the part, the whole are relieved. Thus in epistaxis, the preceding fullness and redness are often equal in both nostrils. It rarely happens, however, that an hemorrhagy from both takes place at the same time; the first vessel which gives way in either nostril relieves the turgescence of both.

Dr. Cullen enumerates seven occasional causes of hemorrhagy; namely, external heat; a considerable and sudden diminution of the weight of the atmosphere; whatever increases the force of the circulation; violent exercise of particular parts of the body; certain postures of the body or ligatures; a particular state of certain vessels from the frequent repetition of hemorrhagy; and lastly, cold externally applied.

On

On comparing these causes of hemorrhagy with what has been said, the manner in which they act will be sufficiently obvious, with the exception of cold, whose operation it is more difficult to trace. It seems to be chiefly by exciting some degree of synocha, that cold occasions hemorrhagy, that is, by increasing the vis a tergo, which probably in a great measure proceeds from its debilitating the vessels of the skin.

Such are the causes of hemorrhagy in general. Certain hemorrhagies proceed from other causes, particularly affecting the part from which the blood flows. An ulcer in the kidneys, ureters, bladder, stomach, intestines, &c. is not an uncommon cause of hemorrhagy. The contents of these cavities being of an irritating quality, or occasioning too great a degree of distension, often has the same effect. The last cause is frequently the means of renewing hemorrhagy of the stomach and intestines, in preventing which it is necessary to caution the patient against too much repletion, particularly against taking copious draughts. Sudden repletion probably acts also by

compressing

compressing the liver, thus tending to obstruct the circulation through it, and consequently oppose an obstacle to the free return of the blood from the intestines. I know a person in whom a copious draught will at any time induce hemorrhagy from the intestines. A malconfirmation of the thorax very frequently proves a predisposing cause of hæmoptysis, and when to a considerable degree an exciting cause. The same may be said of pressure from affections of neighbouring viscera, &c. as in hæmoptysis from schirrous liver, &c.

CHAP. III.

Of the Treatment of the Hæmorrhagiæ.

MANY seem to have regarded all spontaneous hemorrhagies as proceeding from a plethoric state of the system, and have maintained that no remedy should be employed to check an hemorrhagy, unless it is so profuse as to be attended with immediate danger. In these positions, however, many important

important circumstances are overlooked. "In entering upon this subject," says Dr. Cullen, "the first question which presents "itself is, whether the cure of hemorrha- "gies ought to be attempted by art, or if "they should be left to the conduct of "nature. The latter opinion was the "favourite doctrine of the celebrated Dr. "Stahl and his followers. They main- "tained that the human body is much dis- "posed to a plethoric state, and conse- "quently to many disorders which nature "endeavours to obviate and relieve by "exciting hemorrhagy. That this therefore "is often necessary to the balance or "health of the system. That it is accord- "ingly to be generally encouraged, some- "times solicited, and is not to be suppressed "unless when it goes to great excess, or "happens in parts in which it may be "dangerous. Much of this doctrine may "be admitted. The human body upon "many occasions becomes preternaturally "plethoric, and the dangerous consequences "which might from thence be apprehended "seem to be obviated by a hemorrhagy

"taking

" taking place; and the necessity of he-
" morrhagy further appears from hence,
" that the suppression of it seems to occa-
" sion many disorders. All this seems to be
" just, but in the conclusion drawn from it
" there is a fallacy. It appears to me cer-
" tain, that hemorrhagy, either upon its
" first attack, or upon its after occurrence, is
" never necessary to the health of the body,
" excepting upon the supposition that the
" plethoric state, which seems to require
" the evacuation, cannot be otherwise pre-
" vented or removed; and as I imagine it
" possible by other means to prevent or
" remove a plethoric state, so I do not
" think that hemorrhagy is in all cases
" necessary. In general I am of opinion
" the hemorrhagy is to be avoided; first,
" because it does not always happen in parts
" where it is safe; secondly, because often
" while it does relieve a plethoric state, it
" may at the same time induce a very
" dangerous disease; thirdly, because it
" may often go to excess, and either en-
" danger life or induce a dangerous infir-
" mity; and, lastly, because it has a ten-
" dency

" dency to increase the plethoric state it was " meant to relieve, to occasion its own " recurrence, and thereby to induce a " habit, which, if left to the precarious " and unequal operation of nature, may " from the frequent errors of this be " attended with much danger. It is fur- " ther to be considered that hemorrhagies " do not always arise from the necessities " of the system, but often proceed from " incidental causes. It appears to me that " all hemorrhagies of the latter kind may be " immediately suppressed, and the repetition " of them, as it induces a plethora and a " habit not otherwise necessary, may be " prevented with great advantage. Upon " the whole of this subject I conclude, that " every preternatural hemorrhagy, or, in " other words, every one except that of the " menses in females, is to be avoided, and " especially the returns of it prevented." To these observations nothing need be added.

The means employed in hemorrhagy may be divided into those which moderate or check the flow of blood, and those which prevent its return.

The

The means of moderating or checking hemorrhagy may be divided into those which act on the system in general, or on parts at a distance from that from which the blood flows, and those whose action is confined to that part. From what has been said of active hemorrhagy, the reader will perceive that the flow of blood is often supported by the febrile state which attends it, in which the blood is propelled with more than its usual force. A principal indication in active hemorrhagy, therefore, is to diminish excitement, and the different means pointed out for this purpose must occasionally be had recourse to. Those which constitute what has been called the antiphlogistic regimen, and consist in the removal of every cause of irritation, are in all cases essential. The patient must be kept quiet and still, every exertion, either of mind or body proving hurtful. The regular excretion of the fæces is particularly to be attended to, and the means employed for this purpose must be of that kind which occasion least irritation.

Unless the strength be greatly exhausted, in

in which case mild broths and some of the mildest kinds of animal food may be used, the patient should be confined to a vegetable diet. There is nothing of greater importance than a constant supply of cool fresh air, and the drink should be cold. The use of acidulous fruit, cream of tartar, nitre, vegetable acids, or, what is preferable on account of its astringency, vitriolic acid, in the drink is beneficial. All refrigerents are useful in active hemorrhagy.

Even the most powerful means of allaying excitement, blood-letting, which at first sight we should suppose at all times improper, is sometimes advisable. " I am ready " to allow," Dr. Cullen observes, " that the " practice of blood-letting in hemorrhagies " has been often superfluous, and sometimes " hurtful, by making a greater evacuation " than was necessary or safe. At the same " time I apprehend it is not for the mere " purpose of evacuating, that blood-letting " is to be practiced in the cure of he- " morrhagy, but that it is farther necessary " for taking off the inflammatory diathesis " which prevails, and the febrile spasm

" that

"that has been formed. Accordingly, in "the case of hemorrhagy, when the pulse "is not only frequent but hard and full, "and does not become softer or slower on "the flowing of the blood, and when "the effusion is profuse, or threatens to "become so, it appears to me that blood-"letting may be necessary, and I have "often found it useful. It seems probable "also, that the particular circumstances of "venesection may render it more powerful "for taking off the tension and inflamma-"tory irritation, than any gradual flow from "an artery." Blood-letting may often be employed with advantage, however, even where the discharge of blood is considerable, if the febrile symptoms run high, especially if the hemorrhagy be from a part where a wound is dangerous. Blood-letting is often proper also for the purpose of removing the symptoms which precede hemorrhagy, when they are considerable; not only because, by relieving these symptoms, it may sometimes prevent a greater loss of blood, but because, in habitual hemorrhagy, it is often of consequence to break the habit,

which occasions a constant determination of blood to the part.

Burserius and others have recommended blood to be taken during hemorrhagy from the parts in the neighbourhood of that from which the blood flows. The hemorrhagy itself, however, seems to serve all the purposes of local blood-letting. Dry cupping has with more propriety been employed. Local blood-letting may be employed with advantage, as a means of removing the local symptoms which precede hemorrhagy. Blisters are used with the same view.

When the local symptoms, indicating a tendency to hemorrhagy, shew themselves, blisters and local blood-letting are employed for the same purpose as in inflammation; and should, as in the latter case, and for the same reasons, be recommended along with general blood-letting when the vis a tergo is great, and, instead of it, when the habit is debilitated, or the affection of the system inconsiderable. The state of the part previous to the flow of blood, as was observed in the introduction to this part, is in fact that of inflammation. When both blisters

blisters and blood-letting, whether local or general, are judged proper, the blood-letting ought always to precede the blisters.

Blisters have been recommended with a view to moderate the fever which attends hemorrhagies, without regard to the local affection. I have more than once had occasion to observe, that blisters have little, if any, power to allay fever, except by relieving some local affection which supports it; and if they are not so applied as to have this effect, particularly at an early period of hemorrhagy, by increasing the impetus of the blood, they may do harm.

There is some difference of opinion respecting the employment of cathartics in hemorrhagy. With regard to the employment of drastic or irritating cathartics, there cannot be two opinions; but many practitioners have maintained that the exhibition of mild cathartics, so as to keep up a degree of diarrhœa, is useful, on the supposition that hemorrhagy often proceeds from tenuity of blood, which they endeavour to obviate by drawing off the serous part. As far as respects active hemorrha-

gies, this opinion seems to be false. From the several causes of active hemorrhagy which have been mentioned, the reader will perceive that there is no reason for such a supposition, and in very exhausted habits, where the hemorrhagy is more of the passive kind, and its cause may in part at least be morbid tenuity of the blood, to endeavour to relieve the hemorrhagy, by inducing another evacuation, is at least a very precarious practice. The same observation applies to cases in which active hemorrhagy continues till it exhausts the strength, and renders the blood thinner than it ought to be. Upon the whole it would seem, that to prevent any accumulation of fæces is the chief, if not the only, purpose for which laxatives should be employed in hemorrhagy.

The same ideas which led to the use of cathartics, induced physicians to prescribe diaphoretics in these complaints. They had still in view to carry off the thinner parts of the blood. This class of medicines, although the theory which first led to their use has fallen into neglect, is employed with

with advantage for the purpose of relieving the febrile state which precedes and supports active hemorrhagy.

The older practitioners recommended a great variety of medicines for the purpose of promoting perspiration; acids, anodynes, diascordium, milfoil, veronica, nitre, camphire, &c. Antimony, mercury, and saline preparations, are the diaphoretics which seem to be best suited to active hemorrhagy, especially where the pulse is very strong and hard, and the nausea occasioned by the first is often useful here as in inflammation, by diminishing the vis a tergo.

The observations made when we were speaking of the phlegmasiæ, respecting the digitalis, and other medicines which act in the same way, are applicable here.

The reader will find opiates very generally recommended in hemorrhagy. An indiscriminate use of them he will readily perceive, from what has been said, is dangerous. They are improper while much of the phlogistic diathesis remains, and the pulse continues full and strong. After this state has been overcome by proper remedies,

or the continuance of the disease, opiates tend to check the flow of blood. They are particularly indicated with musk and castor when subsultus tendinum or other spasmodic affections supervene.

A variety of astringent medicines are given internally, for the purpose of constricting the vessels, and thus checking the hemorrhagy. The vitriolic acid, I have already had occasion to mention; alum, in which it is combined with an earth, is more powerful. Lead, iron, oak galls, bark, &c. have been recommended. If any of these is more powerful than alum, it is lead, the acetate of which bas been much praised. It is almost unnecessary to caution against the long continued use of this medicine, even in small doses. Where it is of great importance to check the hemorrhagy, it may occasionally be exhibited with advantage. It should be given in combination with mucilage, or, what is better, some tenacious extract, as far as possible to obviate its effects on the stomach and bowels.

The bark and steel are chiefly indicated when the strength, from the continuance of the

the disease or other causes, being greatly exhausted, the complaint partakes more of the passive than active hemorrhagy.

The older practitioners employed various means in this complaint, with a view to form some degree of congestion in parts at a distance from that from which the blood flows; warm clysters, fomentations, baths, (which were often composed of warm wine and other irritating ingredients) frictions, ligatures thrown round the limbs, &c. And at the same time that these were employed, refrigerant applications were made to the parts in the neighbourhood of those from which the blood flowed. It is evident that most of the remedies just mentioned (all the most powerful of them) are of an irritating nature, and therefore of doubtful effect while much of the inflammatory diathesis prevails.

I have already had occasion to observe, that syncope is often serviceable in checking hemorrhagy; it is improper, therefore, to use means to prevent it. All kinds of cordials are on this account to be avoided. Strong odours, and every other means of

rouzing the patient, are improper; and if, from the situation of the part, some degree of the erect posture has been judged proper, the patient should not be laid in the horizontal posture with a view to prevent syncope. These observations, however, do not apply when the hemorrhagy has become passive. Syncope is then attended with great danger, and must be prevented by the usual means.

Many superstitious remedies have been employed, and by the impression made on the mind have sometimes proved serviceable.

Such are the remedies acting on the system in general, or on parts at a distance from that from which the blood flows. We are now to consider those whose action is confined to that part, and which seem to act by occasioning a contraction of the bleeding vessels.

The various astringents just mentioned are employed for this purpose, particularly alum and the acetate of lead. The sulphate of zink is among the most powerful. The reader will find many astringent applications

enumerated

enumerated by the authors who treat of hemorrhagy. Dr. Cullen observes, that the most powerful of all astringents in hemorrhagy, appears to him to be cold. It is useful, we have just seen, applied generally by an atmosphere of a low temperature. When it is applied to the part, it is of advantage to apply it suddenly, and at the same time to parts in the neighbourhood.

Pressure is a powerful means of checking hemorrhagy, when it can be applied to the bleeding vessels; and in obstinate hemorrhagy it is proper, where it can be done, to secure the larger vessels by ligature.

With regard to the means by which the disposition to hemorrhagy is counteracted, a few observations, in addition to what has been said of its causes, will be sufficient.

A plethoric state of the system, we have seen, is one of the most common of these causes; and this state has almost always either been the original cause of the disease, or has been induced by it. This, therefore, is the habit of body, which we are to correct during the intervals.

The

The means of correcting plethora I have more than once had occasion to mention.*

We have two things chiefly in view, to diminish the ingesta, and increase the excreta.

It is difficult to resist the appetite for food, so that it is generally proper to recommend such as affords comparatively a small quantity of nourishment. Vegetable food is best calculated to lessen plethora, but it is necessary, in recommending it, to pay some attention to the patient's habits. The same may be said of substituting water for more nourishing and stimulating fluids.

The best and most effectual way of increasing the excreta, is exercise. Cold bathing and tonic medicines, by increasing the tone of the vessels, tend to prevent plethora, and are doubly indicated when the loss of blood has occasioned much debility.

Those tonics, however, which increase much the force of the circulation, particularly bark and steel, are doubtful remedies, as they may be the means of renewing the

* See Dr. Cullen's First Lines, from the 782d to the 788th paragraph.

hemorrhagy.

hemorrhagy. Mild aromatics and bitters are safer. But the most effectual of this class of remedies, are astringents, which shew little or no tendency to increase the force of the circulation, particularly alum and the vitriolic acid. Bark and steel during the interval, as during the hemorrhagy, are particularly indicated when it is of the passive kind.

When the hemorrhagy has left much debility, it is often necessary to use a more nourishing diet. We are still, however, to choose that which is least irritating. The flesh of young animals is to be preferred to that of old; and wine, if used at all, should be diluted. And although a pretty full diet may be necessary for some time after the hemorrhagy, yet, as soon as the strength is restored, it should be our view to bring the patient to that mode of life which is best calculated to prevent plethora, still, however, with some regard to that he has been accustomed to.

CHAP.

CHAP. IV.

Of the Phthisis Pulmonalis.

THERE is no complaint arranged under the order of hemorrhagy of so much importance as the Phthisis Pulmonalis, which Dr. Cullen ranks as a sequala of hæmoptysis. It will be necessary to consider it at some length. Dr. Cullen defines this disease,

General emaciation and debility, with cough, hectic fever, and, for the most part, a purulent expectoration.

If we except the last of these symptoms, which in a large proportion of phthisical cases, never appears, this definition will be found to apply to glandular affections of the abdomen, as well as to phthisis; and for the purpose of distinguishing the two cases, the former of which I have often seen mistaken for the latter, it may be proper to add to the foregoing definition, without any tension or tenderness of the abdomen. It is true, indeed, that the greater severity of the cough will often serve to distinguish phthisical

phthisical cases; in these, however, the cough is sometimes slight, and has even, it is said, been wholly absent.* I have already had occasion to mention the leading symptoms of hectic fever.

Dr. Cullen divides phthisis into two varieties, the phthisis incipiens without purulent expectoration, and phthisis confirmata with purulent expectoration. Although in most cases of phthisis there is no purulent expectoration for some time after the commencement, it now and then attends from the beginning, as shall be more particularly pointed out hereafter. And in some cases, I have just had occasion to observe, it never appears at all, the reason of which will be evident when we come to speak of the causes of phthisis. I shall not therefore follow Dr. Cullen in this division, nor, indeed, does it seem to serve any purpose.

SECT. I.

Of the Symptoms of Phthisis Pulmonalis.

PHTHISIS often makes its attack with very deceitful appearances, so that the pa-

* See Lieutaud's Synopsis Med. Pract.

tient

tient is scarcely aware of his danger before the case is desperate. The first symptom is frequently a slight cough, occasioned, the patient supposes, not by any complaint of the lungs, where he feels no uneasiness, but by an uneasy sensation about the larynx, which is readily ascribed to cold. At an early period there is either no fever, or it is slight and rather irregular, and very different from hectic fever. The cough is either dry, or a little mucus is expectorated, as in common catarrh. These symptoms give little trouble, and are expected to go off as they have frequently done before without any remedy. Notwithstanding their mildness, however, they prove obstinate, and gradually become more troublesome. They are sometimes from the first accompanied with pains of the chest, either wandering like stitches, or more obtuse, and fixed under the sternum, or in the sides of the thorax. In other cases the pain does not come on till the other symptoms have lasted for some time.

In many cases the complaint shews itself in a more alarming form, hæmoptysis being the first symptom, which is often, indeed, rather

rather the cause than a part of the complaint. By degrees the expectorated matter begins to assume the appearance of pus, and the febrile symptoms that of hectic. "I have "met with some instances," Dr. Cullen observes, "of an expectoration of purulent "matter continuing for many years, accom-"panied with very few symptoms of hectic, "and at least without any hectic exquisitely "formed, but in none of these instances "were the persons so entirely free of hec-"tic as to form any exception to the gene-"ral definition."

Hectic fever is a quotidian remittent, the chief, and sometimes the only, exacerbation of which commences about five o'clock in the afternoon, often with slight chills, which generally continue for some time after the skin, to the feeling of another person, or measured by the thermometer, is warmer than natural. This exacerbation goes on increasing till after midnight, the pulse being seldom under 110, and often above it. About two o'clock in the morning a sweat appears, which relieves the febrile symptoms; and as the morning advances,

advances, the remission becomes more distinct, affording the patient, who is scarcely ever persuaded that his case is desperate, an ill-founded hope of recovery. This remission frequently continues till about five o'clock in the afternoon, when the exacerbation again commences. In other cases there is another exacerbation about noon. "It has commonly been given as a part of "the character of hectic fever," Dr. Cullen observes, "that an exacerbation of it commonly appears after the taking food; and "it is true that dinner, which is taken at "noon or after it, does seem to occasion an "exacerbation. But this must not make us "judge the mid-day exacerbation to be the "effect of eating only, for I have often "observed it to come on an hour before "noon, and often some hours before dinner, "which in this country at present is not "taken till sometime after noon. It is, "indeed, to be observed, that in almost "every person the taking food occasions "some degree of fever; but I am persuaded "this would not appear so considerable in a "hectic, were it not that an exacerbation

"of

" of fever is present from another cause, " and accordingly the taking food in a " morning has hardly any sensible effect."

The urine in hectic is high coloured, and deposits a copious light branny sediment. The bowels are constipated. The thirst, however, is not considerable, and the appetite continues good. The countenance is pale, with a circumscribed redness on the cheeks, which is most remarkable during the exacerbations, and the body generally wastes rapidly.

While these symptoms advance, various marks of debility shew themselves. The hair falls off, the nails are incurvated, the feet become œdematous; in women the menstrual discharge ceases, and at length a colliquative diarrhœa comes on, which may be regarded as the forerunner of death.

There is seldom much head-ach at any period of the disease, and delirium, except towards the fatal termination, hardly ever appears; for the most part, indeed, the senses are retained to the last, and, what is more surprising, the spirits and even the appetite. It has been observed, indeed, that

that the appetite is often better than usual a few days before death.

Such is the general course of the disease; it will be necessary to consider its symptoms more particularly.

The cough at the commencement, I have just had occasion to observe, is generally dry, and sometimes it continues so during the whole course of the disease. In most cases, however, it becomes moist, and the matter expectorated is various. In the beginning it is generally mucous, frequently bloody, and as the disease advances gradually assumes a purulent appearance.

Much has been said of the means of distinguishing an expectoration of pus from that of mucus, which cannot with certainty be done by the eye. For this part of the subject I refer to what was said in the introduction to the second part, where it is considered at length.

When the cough is violent, particularly in the advanced state of the disease and after meals, it is often accompanied with reaching and vomiting, which has been regarded by Morton and others as a diagnos-

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tic mark of the phthisical cough. This, however, is far from being constant, and vomiting frequently accompanies violent coughing from whatever cause. Exposure to cold, drinking cold liquors, the horizontal posture, and every thing which tends to hurry the breathing, are apt to excite the cough. It is generally worst in the evening, during the night, and on awaking from a sleep of some continuance. Sometimes it is short and hard, at other times full and soft. The fits of coughing often continue for some time, and either cease spontaneously, or are relieved by a more or less free expectoration.

Some have thought that they can distinguish a consumptive cough from a catarrhal, merely by the sound, and in the advanced state of the disease it has a peculiar hoarse hollow sound, which is very remarkable, though not wholly confined to phthisis. At early periods the sound of the cough assists but little in forming the diagnosis. The short hollow cough, supposed characteristic of phthisis, is not always very distinctly marked, and often attends other diseases.

A cough can only with certainty be pronounced phthisical, by attending to the circumstances which accompany it, particularly to the state of the febrile symptoms and the nature of the matter expectorated.

There has been some difference of opinion among medical writers, concerning the inference to be drawn from purulent expectoration. It has been the general opinion that it always indicates an ulcer of the lungs. It appears, however, from what was said in the introduction just referred to, that pus may be formed without ulceration; and some have asserted that by examining the purulent sputa we may determine whether they proceed from an ulcer or not. "In "every instance of an expectoration of "pus," Dr. Cullen observes, "I presume "there is an ulceration of the lungs. The "late Mr. De Haen is the only author that "I know of who has advanced another "opinion, and has supposed that pus may "be formed in the blood vessels, and be "from thence poured into the bronchiæ." The reader will readily perceive the fallacy of this explanation, but the fact has been confirmed

confirmed by other writers, whom Dr. Cullen overlooked. In the 28th section of the 22d Ep. of Morgagni de Sedibus et Causis Morborum, there is a case related, which seems to be of the same kind with that mentioned by De Haen. To this Burserius refers, and also to Bennet's Tabidorum Theatrum, Lieutaud's Historia Anatomica Medicà, and the first volume of the Collectio Obs. Med. Pract. by Fred. Casimirus, for similar cases.*

It is true, indeed, that a charge brought against De Haen, that he did not with sufficient accuracy determine the expectoration to be purulent, may be urged against all of these cases. When we compare them, however, with later observations, there can be little doubt of the accuracy of the statement of these authors. We have seen how readily pus is formed by secreting surfaces. Dr. Hunter relates a case of empyema, where there was no ulceration. Pus is often discharged in gonorrhœa without ulceration. I have seen it discharged from

* See also a Treatise, in Schroeder's works, on the Production of Pus without Ulceration.

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the nose, where there was no reason to suspect any; even in common catarrh the expectoration is often purulent. And that causes may exist capable of supporting a purulent discharge from the bronchiæ, and inducing the other symptoms of phthisis, without ulceration, will be rendered more probable from what I shall have occasion to say respecting the causes of this complaint.

If phthisis without ulceration exists, it would be of no small consequence to be able with certainty to distinguish such cases. Where there is no ulcer, the chance of recovery must be better, and it is not improbable that the modes of practice should in some measure be different.

The diagnosis offered by the late Dr. White, published in 1792 by Dr. Hunter, of York, will not, I fear, be found sufficient for this purpose. He terms the pus produced by inflammation without ulceration, inflammatory exudation. This, he observes, does not ferment or become putrid per se. A quantity of it, kept by way of experiment, after some time became dry and tough, smelling sour and faintish. This species

species of matter, he observes in another place, in its natural state, appears to be a homogeneous, smooth, yellowish fluid, resembling good cream, without smell, and rather sweetish to the taste, it swims in water, and when burnt smells like burnt cheese. The matter of suppuration, he thinks, is a compound, consisting of inflammatory exudation and a portion of putrid blood and solids, varying in its appearance according to the predominance of the one or other of its component parts. The greater the proportion of the putrid ichor, the more fetid, brown, sanious, and putrid it will be. The contrary condition will make it more like laudable pus, yellower or whiter, more unctuous and homogeneous, and less putrid. This kind of sputa, like the other, according to Dr. White, swims in water, and has an offensive smell, except when the proportion of putrid ichor is very small, but even then if it be burnt its putrescency becomes manifest.

Dr. Stark also proposes an experiment for determining whether or not the matter expectorated in phthisis comes from an ulcer.

As the spitting, he observes, is perhaps the most certain criterion of vomica, it will be proper to enquire into its peculiar character, that it may be distinguished from pus and mucus, two substances which it greatly resembles. All of them, when free from air bubbles, sink in water.* Pus is easily diffusible in it, by gentle agitation, but in a few hours falls to the bottom. Mucus cannot be diffused in water without strong agitation, but when diffused, forms with it a permanent ropy fluid. The spitting of consumptive patients is more easily diffusible in water than mucus, and, like that, forms with it a ropy fluid, which, although it deposits a sediment like pus, still continues ropy, resembling mucus and water. All that this experiment tends to prove is, that the matter expectorated in phthisis contains both pus and mucus, which must be the case whether it comes from an ulcer or not.

Baglivi says, that an excretion of small granules by coughing, which, squeezed be-

* When the thinner parts of mucus have been absorbed, it readily sinks in water.

tween

tween the fingers, have much fetor, certainly indicates a latent vomica. Dr. Stark also observes, that when the matter expectorated is yellowish and in small round masses, it probably comes from small vomicæ. Dr. White, however, remarks, that he has seen an expectoration of this kind without any bad consequences, an observation I have heard made by others, so that it is probable a purulent or some other secretion may assume this appearance without the presence of vomicæ.

We may, I think, with more certainty determine whether the matter expectorated comes from an ulcer or not, by attending to the accompanying symptoms, than by any examination of the matter itself while it retains the appearance of mere pus. Where there is no ulcer, I think, from many cases which have fallen under my care, the hectic is less exquisitely formed, and, in particular, the morning sweats are more moderate and easily checked. In considering the causes of phthisis, we shall find some circumstances tending to assist this diagnosis.

Upon

Upon the whole, however desirable it may be to distinguish the purulent secretion of an inflamed surface, from that of a sore in the lungs, it seems, in the present state of medical knowledge, that this can only be done with certainty when the purulent matter, as frequently happens in phthisis, is mixed with the blood or sanies discharged from ill-conditioned sores.

The colour and consistence of the matter expectorated is various. It is often ash-coloured, yellow, or green, and very frequently all these colours are perceived in it. It is generally more or less viscid, and more or less charged with air bubbles, and the blood, which is so often mixed with it, is of different shades. Calcarious matter is sometimes expectorated in phthisis, now and then from the beginning of the complaint, and the presence of this matter, indeed, seems often to occasion the other symptoms.

Sometimes a white, tough, ramified matter, which has the appearance of small branches of the bronchiæ, is coughed up. It consists of inflammatory exudation, which becomes dry and tough, assuming the form

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of the cavities in which it is deposited. The same matter is sometimes observed in the stools of phthisical patients, from their swallowing the sputa, which they should always be directed to avoid.

The quantity of the matter expectorated is various. In most cases it gradually increases as the disease advances; and after it assumes the purulent appearance, often amounts to ten or twelve ounces, a pound, or even more, in twenty-four hours. It is commor for the quantity of sputa to decrease towards the fatal termination, especially when the sweats become very profuse, and more frequently after the colliquative diarrhœa comes on. When this happens, it has been observed, that very little matter is found in the vomicæ after death.

It is chiefly after the expectoration of pus commences, that phthisis has been regarded as contagious. I shall presently have occasion to make some observations on this opinion, and likewise on the much disputed question, whether hectic always arises from the absorption of pus.

In most phthisical patients, particularly during

during the exacerbations, the breathing is hot, quick, and laborious, and after the disease is advanced at all times offensive. It is not uncommon for it to be attended with a rattling or wheezing, sometimes very remarkable, at others, only to be perceived when the ear is placed near the thorax of the patient. They are occasioned by the secretion from the bronchiæ, which the patient is too weak wholly to expectorate.

The dyspnœa is generally attended with a sense of weight or tightness in the breast, and walking, and every other exertion which adds to the force of the circulation, increases it. Sometimes the breathing is easier when the patient lies on one side than on the other, and sometimes it is easiest when he lies on the back.

It has already been observed, that, particularly in the beginning of the disease, when the cough is generally dry or attended with a scanty expectoration of mucus, there is often no fixed pain, but wandering stitches in the thorax. In some cases there is no pain of any kind at any period of the complaint. In the majority, however, there is sooner or

later

later a fixed pain in some part of the thorax, seldom acute, and sometimes only to be felt when the patient makes a deep inspiration or coughs.

It was observed above, that at the commencement of phthisis, the fever is often very irregular, not assuming the form of hectic till the disease is considerably advanced. In many cases the fever is wholly absent for some time after the cough and pain have made their appearance.

It is of much consequence to attend to the state of the pulse at the commencement of phthisis, for when it is uniformly more frequent and harder than natural, without the characteristic symptoms of hectic, and, at the same time, the symptoms which particularly indicate the presence of tubercles, (which I shall soon have occasion to enumerate) are observed, there is reason to suspect that some of these are inflamed, but not advanced to suppuration. In this kind of fever, the tongue and skin are dry, and the appetite not so good as it generally is in hectic. We must not, however, mistake the

the transitory frequency of pulse, so remarkable in delicate people after meals, for this fever. I have known people in their ordinary health in whom the pulse often rose after dinner, for weeks together, to about 110 or above it, and the fever run so high as to render it necessary to go to bed. This state is readily distinguished from the cases I am speaking of, in which the pulse is seldom much under 90. In the former, before dinner, it is not perhaps more frequent than natural, and about eight or nine o'clock in the evening, the time at which the fever in phthisical patients is very considerable, in this case it is hardly, perhaps, to be perceived, unless the patient has been using violent exercise, been exposed to a cold damp evening, or other causes, which support fever.

Whatever form the fever may at first assume in phthisical cases, it almost always gradually becomes a well formed hectic. This generally happens about the time that the matter expectorated begins to assume a purulent appearance, sometimes before this period,

period, seldom long after it.* The face then becomes pale, and the redness of the cheeks more circumscribed. In some patients the lips are remarkably pale; in others, both these and the internal canthus of the eye, very florid, while the adnata assumes a dead white. The evening exacerbation, and sometimes that at noon, soon become very evident.

The fever has generally been observed to run highest in the most robust, and, consequently higher in men than in women, but it never rises to an alarming height, scarcely ever being attended with any degree of delirium, and rarely with head-ach. The thirst is not considerable, the tongue is moist, and, particularly in the advanced stages of the disease, remarkably clean and in some degree inflamed. In some cases it grows dry and painful, and towards the ter-

* There are cases of well marked phthisis on record, in which the fever never assumed the form of hectic. I have known many die of this disease, in which the leading characteristics of hectic, the evening chills and morning sweats, were never such as particularly attracted the patient's notice.

mination

mination of the disease is often covered with aphthæ.

The skin in the progress of the paroxysm is hot and dry, and sometimes hard and painful to the touch, the patient generally complaining of much heat in the hands and feet.

The pulse, which during the remission is seldom under 90, small, and at an early period for the most part hard, is generally during the exacerbation, particularly in those of an irritable habit, near 120, and often above 130.

The appetite, though generally good, is not universally so; towards the fatal termination it sometimes becomes voracious. The bowels at the commencement, during most of the progress of the disease, are for the most part costive.

The menses often cease at an early period, more frequently when the sweats become profuse, and sometimes not till the diarrhœa comes on.

The eyes sink, the nails shrivel and become incurvated. There is now much anxiety, particularly during the exacerba-

tions,

tions, and the breathing is short, hurried, and laborious. As the debility increases, the sweats become more profuse; and there is hardly any complaint in which emaciation goes to so great a length. The joints seem swelled, and almost every furrow in the bones becomes evident.

It is after the complaint has arrived at this stage that the sweatings seem to lessen every other secretion. The mouth becomes dry, the bowels more costive, the hair falls off. The urine, which from the beginning of the hectic fever is scanty and high coloured, now becomes more so, still continuing to deposit a copious furfuraceous sediment. Even the expectoration, as I have already had occasion to observe, whether of pus or not, is generally diminished. It sometimes happens, indeed, towards the fatal termination, that the sputa are increased by a considerable admixture of blood, the increasing ulceration destroying many of the smaller vessels.

The sediment from the urine in phthisis has been improperly termed lateritious, from its generally appearing reddish, but it sel-

dom falls to the bottom of the vessel, and forms itself into crystals, like red sand, as the lateritious sediment does. It seems owing not to the absorption of pus, as has been supposed, but merely to the great increase of perspiration. It is of the same nature with that which may at any time be produced by exciting the action of the skin.*

Thus the symptoms proceed till the last stage commences, which begins with the diarrhœa that almost universally attends the termination of this as well as many other fatal complaints. When the diarrhœa comes on, the sweats generally become less profuse, sometimes cease altogether, and the two affections now and then alternate for some time before death. It is very remarkable, that not only the purulent expectoration sometimes ceases at this period, but even the fever itself, the pulse falling to 70 or 80, but these changes do not improve the prognosis. The colliquative diarrhœa in phthisis is sometimes purulent. Does the occasional absence of fever at this

* See the experiments in the Appendix to the third volume of this Treatise.

period

period ever arise from the pus being discharged in this way ?

Phthisis sometimes runs a very different course from that which has been described, and one that has not been sufficiently noticed. I have seen it prove fatal, where not only there was neither hectic fever nor purulent expectoration, but even little or no emaciation. In one case of this kind, in which I examined the lungs after death, they were found almost wholly converted into a cluster of tubercles, and life was extinguished by no other cause but that the lungs were rendered unfit to perform their functions. The strength was by no means exhausted, and the person who opened the body said he had seldom seen so much fat about the heart. There was pus in some of the tubercles, but it is probable that absorption had been prevented by the callosity of the sides of the abscesses. Such cases are to be distinguished by the symptoms which denote the presence of tubercles.*

When hectic fever is attended with the

* See the section on the causes of phthisis.

local symptoms of phthisis, it is readily distinguished from other fevers. When the former are less distinctly marked than usual, it is sometimes confounded with quotidian remittents, especially as these are frequently attended with some affection of the chest. If, however, we attend to the history and causes of these diseases, we shall seldom be at a loss to distinguish them. It will often appear that the remittent has formerly been an intermittent, or that it has been gradually assuming more of the continued form. The fevers prevalent in the neighbourhood, or the presence of marsh miasma, will often point out its nature. Besides, in remitting fever the sweats are less profuse, and the duration of the paroxysm much longer, than in hectic. Where, however, we cannot distinctly trace a local affection, we must be cautious in admitting the fever to be hectic. In cases where the local affection is indistinct, we shall often find, on enquiry into the history of the case, that at some former period it has constituted a greater share of the disease. The great emaciation and the peculiar habit which disposes to phthisis, assist the

the diagnosis in doubtful cases, which are very rare, the symptoms of this complaint in general being sufficiently marked.

After the appearance of the diarrhœa, which no means are capable of interrupting for any considerable length of time, all the symptoms grow rapidly worse. The breath becomes extremely fetid, the matter expectorated is often so much so that even the patient himself can hardly bear the smell of it. A sense of great anxiety and often nausea harrass him; the pulse is small and extremely frequent; the voice becomes hoarse, or fails altogether; the hands, legs, and feet swell; the eyes become dim and sink; the temples fall in, and the nose is sharpened; symptoms which are gradually increasing from an early period, but are now most remarkable.

The urine is often pale, muddy, and sometimes in considerable quantity.

Sometimes the patient complains of head-ach, which is now and then followed by some degree of delirium. In other cases vertigo and fits of syncope come on.

In the mean time the discharge from the

bowels becomes more fetid and profuse. The pulse flutters, the extremities become cold, and the patient, at length exhausted, imperceptibly expires, for death in this complaint is almost always easy.

It is not uncommon for the cough to cease as the fatal termination draws on, while the anxiety and dyspnœa increase.

Strange as it may appear, amidst the horrors of this situation, the patient's hopes seldom abandon him, and sometimes seem even to increase as the fatal termination approaches. "Nor is this illusion," says Desault, "con-"fined to those who are ignorant of medi-"cine. I have even seen physicians just "expiring with this complaint, who would "not admit that they were phthisical. "Tant il est vrai que l'amour de la vie nous "seduit et nous persuade aisément ce que "nous desirons avec ardeur." But in the nature of the disease itself, which increases by so imperceptible degrees, and to the last leaves the mental faculties so little impaired, we are in part at least to look for the cause of this deception.

The last stage of phthisis is sometimes prevented

prevented by hemorrhagy from the lungs, which proves suddenly fatal.

The duration of phthisis is various; many labour under it for years, the symptoms becoming worse in spring and autumn. It is not uncommon for it to last for two or three years, and there are cases in which it is said to have lasted for 20 or 30.* Cases of this kind, however, are extremely rare, at least where considerable intermissions have not occurred, and are probably not a little exaggerated. It is thought by some, that the duration of the complaint is generally the greater, the older the patient is. The usual duration of phthisis is from two months to two years.

When it runs its course very rapidly, it greatly resembles pneumonia, and, indeed, imperceptibly runs into this complaint; so that the only differences to be perceived are, that the inflammatory symptoms in phthisis are for the most part less severe, the purulent stage better marked, and the emaciation more rapid, circumstances which depend on

* See the observations of Lieutaud and others on this disease.

the languid nature of the inflammation in phthisis, and the peculiar habit of those who are subject to this disease.

Purulent collections about the fauces, when the matter is gradually discharged, so as to be thrown out by coughing, have sometimes been mistaken for phthisis, and have even deceived the most experienced; cases of which the reader will find related by Raulin and others. The patient should therefore be questioned whether he feels any uneasiness about the face or throat, which generally attends abscesses of these parts and forms the best diagnosis. When any complaint of this kind is made, the internal fauces should be carefully examined. The breathing of the course is then either not affected, or affected in consequence of some tumor or other disease about the larynx. Upon the whole, however, it may be affirmed, that in ninety-nine cases of a hundred, where the sputa are purulent and the patient labours under hectic fever, the complaint is phthisis.

SECT.

SECT. II.

Of the morbid Appearances on Dissection.

VARIOUS morbid appearances are observed on opening the thorax. In some cases the lungs exhibit nearly the same appearances as in pneumonia. For, as was observed when we were considering that complaint, if the bursting of the abscess does not occasion suffocation, nor its sides become so indurated as to prevent absorption, it soon produces hectic fever, and the other symptoms of phthisis, with or without purulent expectoration, according as the abscess has or has not formed a communication with the bronchiæ.

It appears, we have seen, from a variety of observations, that there have been cases of phthisis without either an abscess or an ulcer of the lungs. All that is remarkable on dissection in such cases, are traces of inflammation, and a quantity of pus in the branches of the bronchiæ.

But the most common of all the morbid appearances in the lungs of those who die of

of phthisis, are tubercles. These are hard tumors, from the smallest sensible size to about half an inch or an inch in diameter, situated, Dr. Stark observes, in the cellular substance of the lungs. They are of a light colour, and if they have not suppurated, generally solid throughout. In the same subject they are found of various sizes, and they frequently appear in clusters. No vesicles, cells, or vessels are to be seen in the solid tubercles, even on examination with a microscope, and after the pulmonary artery and vein have been injected.

On the cut surface of some are observed small holes, as if made by the pricking of a pin, and at the bottom of the cavities containing pus several small holes are frequently to be seen, from which, on pressure, purulent matter issues, but neither of these seem to communicate with any vessels.

The purulent cavities of tubercles are of different sizes, from the smallest perceptible to half an inch or three quarters of an inch in diameter, and when cut through and emptied, have, if the suppuration has been completed, the appearance of small white

cups,

cups, nothing remaining of the substance of the tubercle, except a thin covering or capsule. The cavities of less than half an inch diameter are generally shut, those which are larger open into the bronchiæ by one or more holes. The largest vomicæ, which are generally of an oval shape, are lined partially or wholly with a smooth, thin, tender slough or membrane. The matter found in these cavities is similar to that expectorated, and has seldom any admixture of blood, except where there are ulcerations. The vomicæ often communicate with each other by ragged openings.

The larger vomicæ, which have numerous bronchial openings, are found to contain scarcely more matter than is sufficient to besmear their surface. The largest are generally situated towards the back part of one of the upper lobes. Several small apertures on the surface of the lungs often lead to the vomicæ; and sometimes, though not often, a vomica is a hemispherical cavity in the external part of the lungs.

Wherever there is a vomica, there is a broad and firm adhesion of the pleura, so

as

as to preclude all communication between the cavity of the vomica and that of the chest; even tubercles, indeed, are seldom found without adhesions.

Those parts of the lungs which are contiguous to tubercles, are red, sometimes soft, but more frequently firm and hard. And whilst the sound parts of the lungs are distended by blowing into the trachea, the parts near to tubercles and vomicæ remain depressed and impervious, whether the air be blown through the trachea or into incisions made in the surface of the lungs. So that the function of the lungs in those parts is wholly lost.

The pulmonary arteries and veins, as they approach the larger vomicæ, are suddenly contracted; and when outwardly, the vessel appears nearly of the proper size, the cavity is still found to be much lessened, being almost filled up by a fibrous substance. The vessels passing along the tubercles are often found detached from the neighbouring parts for about an inch of their course. When the lungs are injected, the injection is rarely found to have entered the middle-sized

sized vomicæ, and very seldom the larger or smaller ones.

The branches of the bronchiæ are never found contracted. The internal surface of those which open into the larger vomicæ is often of a deep red colour, seemingly from the enlargement of vessels, and the internal surface of the trachea itself is sometimes partially red.

In different cases the morbid appearances are more or less considerable. From a rude calculation, made on the lungs of many who died of phthisis, the part which remains fit for the admission of air may, at a medium, be estimated at one-fourth of the whole. The higher and posterior parts are most frequently affected and to the greatest degree, and the lungs on the left side, it is said, more commonly than those on the right.

The lymphatic glands of the chest are of a dark colour, and sometimes contain a matter like moistened cheese.*

When calcarious matter has been expec-

* See Dr. Stark's Treatise, from which the foregoing observations are extracted.

torated,

torated, it is generally found in the lungs in considerable quantity. The pleura costalis and the pleura of the lungs sometimes adhere almost throughout their whole extent. Ulcers are often found in the branches of the bronchiæ, and sometimes in the trachea itself. When the ulcers are confined to the trachea, the complaint cannot be regarded as phthisis.* In some cases of phthisis, where ulcers have been found in the trachea, there has been reason to suppose that they first attack this part and afterwards spread to the lungs.

It is not uncommon to see a whole lobe, or even a larger portion of the lungs, almost consumed by suppuration. We even hear of cases where half of the lungs has been consumed so that it was surprising that life could go on so long.

The abdominal viscera are often much affected. Dr. Stark says, that there is seldom any morbid appearance in them, except slight erosions of the villous coat of the intestines. But other writers mention indu-

* For an account of the phthisis trachealis, see the Institut. Med. Pract. of Burserius.

ration,

ration, enlargement, ulceration, and abscess of the liver, spleen, and other abdominal viscera. The most common of these appearances is enlargement of the liver, which is often very perceptible to the touch previous to death, and is, as will appear, I think, from what I shall have occasion to say of the causes of this disease, often more essentially connected with it than has generally been supposed.

With regard to the ratio symptomatum of phthisis, it may be observed, that the symptoms of this, like those of most other complaints, are either such as we can at once account for, or whose causes are involved in so much obscurity, that little can with certainty be said of them. It is unnecessary to inform the reader, that the irritation occasioned by the matter in the bronchiæ causes coughing, or that the ulcer in the lungs is the cause of the pain. It is impossible to be acquainted with the appearances on dissection, without making these inferences. But who can explain why the cheeks become florid, in proportion as the adnata becomes pale; or why the discharge

charge by the skin is at a certain period of the disease exchanged for that by the bowels. I should, therefore, have passed over in silence the ratio symptomatum in this, as I have done in most other cases, were it not that the disputes concerning the cause of the hectic fever has rendered this part of the ratio symptomatum of phthisis interesting.

Many attribute hectic fever to the absorption of pus; others maintain that it never arises from this cause. Both sides of this question have been supported by arguments of two kinds; the one, inferences from matters of fact; the other, certain reasonings derived from the sensible and other qualities of pus, concerning the effects it would probably produce if received into the mass of blood. I shall confine myself to a short review of the former arguments, because I can find none of the latter at all satisfactory, nor does the state of our knowledge seem to admit of reasonings of this kind.

The principal arguments tending to prove that hectic fever does not arise from the

absorption

absorption of pus are, that abscesses, even of a considerable size, have existed for years without occasioning hectic fever; for the most part indeed producing fever, but fever of a very different nature; after the amputation of a considerable limb, a very large surface is constantly covered with pus, and even exposed to the air, a circumstance acknowledged to favour the production of hectic fever, yet this fever rarely appears; towards the end of dropsy, where there is no abscess, hectic fever often shews itself; when any acrid matter is absorbed, we generally find tumors in the lymphatic glands through which it passes; when a purulent ulcer is attended with hectic fever, this is not observed; it has been maintained that hectic fever is often completely formed when there are inflamed tubercles in the lungs before suppuration has taken place. "In recent affections of the lungs," Dr. Reid observes, "when their substance is "inflamed, and tubercles formed but not "suppurated, the fever is continued, and "similar to that attending inflammations of "the pleura and other parts of the body.

"When the lungs become more diseased, "their substance obstructed and indurated, "so as not to be pervious to the air in "respiration, the fever changes its type, "has remissions in the forenoon, and ex- "acerbations in the evening, terminating by "sweat on the breast and upper parts of "the body towards morning. If the hectic "fever is occasioned," he adds, "by the "acrimony of pus absorbed from the dis- "eased lungs, from whence does it proceed "before the tubercles are suppurated, or "any pus formed in the lungs?" Were we assured that this observation is well founded, it would be sufficient to determine the point; but this is far from being the case. There are many instances of debility, emaciation, and fever, which, by careless observers, might be mistaken for hectic, especially as it is frequently attended with some degree of morning sweats, without suppuration having taken place in the lungs; but it does not appear that exquisitely formed hectic ever supervenes in phthisis till pus has been formed. The foregoing observation of Dr. Reid, therefore, may be set aside. It

will

will be necessary, in a cursory manner, to consider the other arguments just mentioned.

Those who maintain that hectic fever is always the consequence of the absorption of pus, admit that abscesses have sometimes been known to continue for a long time without producing fever, and much more frequently without producing hectic fever; but in these cases there seems, they think, to be little absorption of pus, the sides of the abscess having become callous, and the abscess itself continuing without either increase or diminution, and giving little or no uneasiness.

Towards the fatal termination of dropsy, it is granted that hectic fever often makes its appearance. But on laying open dropsical cavities after death, the dropsical fluid is often found more or less mixed with pus, and what is drawn off by tapping, for some time before death, is often in the same state. Besides, towards the fatal termination of ascites, there is often an expectoration of purulent matter.

With regard to pus not occasioning tumors in the lymphatic glands, in its passage

to the blood, it may be said, that pus is not of a nature apt to irritate or inflame these glands; in the same manner as the matters of syphilis and cancer, which inflame the glands, are not fitted to excite fever.

The only remaining argument is, that of hectic fever not so frequently succeeding large wounds, as it ought to do, were it occasioned by the absorption of pus. This seems to be the argument of most weight, and to which it is not easy to find a satisfactory answer. It may be observed, however, that it is not very common for wounds to continue to form a great deal of pus for a considerable length of time, and when they do, they often produce hectic fever. The removal of the dressings, and frequent cleaning of the wound, must tend to prevent the absorption of pus. While granulations are going on, the matter secreted is less copious and more bland and thick than when the wound is ill conditioned, as is generally the case in ulceration of the lungs. The former, we have reason to believe, is less apt to be absorbed; and when absorbed, less apt to occasion fever.

In

In addition to these observations, it is maintained that hectic fever is never distinctly formed without the presence of purulent matter in some part of the body.

The conclusion from these observations seems to be, that if the common opinion that hectic fever in phthisis is the consequence of the absorption of pus, is not wholly established, it is at least the most probable of the two.

SECT. III.

Of the Causes of Phthisis Pulmonalis.

THIS disease is mentioned in the medical writings of every period, from the days of Hippocrates to the present time. It is a disease of temperate climates, and in no country so frequent as in Great Britain. In London it is said that 5000 die annually of consumption. Allowance, however, must be made for many diseases passing under this name, which are of a different nature. But the proportion of those who die annually of phthisis in Britain, is certainly very great. Sydenham

 alledges,

alledges, that two thirds of those who die of chronic diseases fall a sacrifice to it.

Those who are of a slender make, with a long neck, delicate smooth skin, and a fair ruddy complexion, with white and transparent teeth; who have a flat or narrow chest, with high shoulders, and stoop when they walk; who possess an habitual and great flow of spirits, with an early acuteness of understanding, are most liable to phthisis.

As the make and habit of body is hereditary, some account in this way for phthisis being so, and we have every reason to believe that the peculiar make and habit of body alone are sufficient to dispose to the disease, but we often see the children of phthisical parents, who inherit very little of this habit, fall a sacrifice to phthisis. When we come to speak of the causes of tubercles, we shall find that there are other circumstances which tend to shew that the hereditary disposition to phthisis does not wholly consist in any habit of body that is observable.

Women, upon the whole, are more liable to phthisis than men, and those between the

age

age of puberty and 35, than others. It appears, however, much later than 35, and sometimes, though more rarely, long before puberty. Children have been born with all the symptoms of phthisis, and died of it a very short time after birth.

The climate then, the hereditary disposition, the female sex, and the most vigorous period of life, may be regarded as the predisposing causes of phthisis. The other remote causes of this complaint may be termed exciting. When, however, several occasional causes are applied successively, some of them in almost every instance act merely as predisposing.

A great variety of causes has been enumerated, as capable of exciting phthisis. They may be divided into three classes. The first comprehending those causes which exist in the lungs themselves and the parities of the thorax; the second, external causes acting on the lungs; and the last, causes acting on the system in general.

The causes existing in the lungs themselves, and the parities of the thorax, are tubercles, suppuration of the lungs in con-

sequence of common pneumonia forming either an open ulcer or a vomica, the presence of calcarious concretions in the lungs, hæmoptisis, catarrh, asthma, metastasis of pus from other parts to the lungs, extensive adhesions of the pleura, fracture or exostosis of the ribs, and mal-conformation of the thorax.

The external causes acting on the lungs are, bad air, dust taken in with the breath, other irritating matter introduced by the trachea from aphthæ or other affections of the mouth, contusions and wounds of the thorax.

The causes of phthisis affecting the system in general are, an inactive sedentary life, indulging much in the use of intoxicating liquors or in venery, the lues venera, suppressed hemorrhagies, certain eruptive fevers, any repelled eruption, in short, whatever greatly debilitates or tends to occasion a plethoric state of the system; and many add to these causes, contagion.

I shall make a few observations on each of the foregoing causes. I shall not, however, follow the order in which they have been

been mentioned, but divide the subject into two parts; the first, treating of tubercles, the most frequent cause of phthisis, and the causes which produce them; the other, of those causes which occasion phthisis without producing tubercles.

I have already had occasion to describe the appearance of tubercles. What I am now about to say of them may be divided into an enumeration of the causes which produce them, and of the symptoms which indicate their presence while they are in an indolent state.

It seems now very generally agreed among physicians, that the predisposing cause of tubercles is in most, if not in all cases, a scrophulous habit. Tubercles resemble the scrophulous swellings of lymphatic glands in other parts of the body; like these too their progress to suppuration is generally slow, and the ulcer formed by them is difficult to heal. Those born of scrophulous parents are most subject to tubercles. They are often accompanied with scrophulous affections in other parts of the body, mesenteric obstruction, glandular

swellings

swellings in the neck, &c. It often happens in the same family, that some are affected with external marks of scrophula, others with phthisis. Those who have been much troubled with scrophulous swellings and sores at an early period of life, are often attacked with phthisis about the age of puberty or soon after it. Besides, where no scrophulous taint can be observed either in the patient or his relations, his habit is generally of that kind which accompany scrophula, and gives reason to believe that the constitution is not free from a tendency to it. The scrophulous habit is marked by the sanguine temperament, a fine skin and complexion, large veins, soft flesh, and thick upper lip. These circumstances leave little room to doubt the scrophulous nature of tubercles. Dr. Cullen, indeed, and other writers have enumerated causes as capable of producing tubercles, independently of any scrophulous affection. It would seem, however, that these causes act merely as exciting.

" Another species of acrimony," Dr. Cullen observes, " producing tubercles, and

" thereby

"thereby phthisis, may be said to be the "exanthematic. It is well known that the "small-pox sometimes, and more frequently "the measles, lay the foundation of phthisis. "It is probable also, that other exanthe-"mata have the same effect, and from the "phenomena of the disease, and the dissec-"tions of persons who have died of it, it is "probable that all the exanthemata may "occasion phthisis, by affording a matter "which in the first place produces tuber-"cles." Concerning these observations, it may in the first instance be remarked, that the idea of exanthematic acrimony being lodged in the lungs, and there producing tubercles, is merely hypothetical. It is by no means a fair inference, that because phthisis follows a disease produced by the introduction into the body of a certain morbific matter; the former complaint, as well as the latter, arises from the presence of this matter. We have every reason to adopt another opinion. Sometimes in small-pox, and more frequently in measles, there is an evident tendency to pneumonia; and it is where this tendency is most consider-able,

able, and in those of a scrophulous habit, that phthisis is apt to supervene on these fevers, and in such habits tubercles may be excited by whatever tends to irritate and inflame the lungs, as will evidently appear from a consideration of their other causes.

Similar observations are applicable to the other supposed acrimonies deemed capable of producing tubercles. In some of these instances the debility occasioned by tedious disorders seems to be the exciting cause. It is well known that, in the predisposed, whatever debilitates may give rise to scrophulous affections.

Such are the circumstances which would induce us to believe that tubercles, and consequently phthisis when it proceeds from them, as in by far the majority of cases it does, are a scrophulous affection. It was to this I alluded when it was observed, that the hereditary disposition to phthisis consists in something more than the observable peculiarity of habit, for although a peculiar habit often marks the scrophulous tendency, this is by no means universally the case. The most unequivocal marks of scrophula often

often appear in those who have none of the marks of such a habit.

If tubercles are a scrophulous affection, and if ulcers of the lungs generally proceed from tubercles, it is not surprising that phthisis is so fatal. We know with what difficulty scrophulous ulcers in external parts are cured, and the constant motion and access of air, and the impossibility of cleaning or applying dressings to ulcers of the lungs, must render them still more obstinate there.

It appears then that the predisposing cause of tubercles, is a scrophulous habit; we are now to take a view of their exciting causes.

It has been observed, and not without reason, that the commencement of phthisis, from whatever cause, so frequently resembles catarrh, and has so often been mistaken for it, that there is reason to believe this complaint less frequently the cause of phthisis than is generally supposed.

Catarrh has been ranked among the causes of phthisis as long as the complaint has been known. There are three ways in which it may occasion an ulcer of the lungs. It

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may give rise to pneumonia or hæmoptysis, which I shall soon have occasion to consider as causes of phthisis. But the manner in which it most frequently operates is by exciting tubercles. This it may do, merely by the violent and repeated agitation of the chest when the cough is severe and long continued, or it may excite them in the same way that we see tumours of the lymphatic glands occasioned in external parts, by taking cold; and this we have reason to believe is the way in which catarrh generally operates, for its tendency to produce tubercles is by no means proportioned to the severity of the cough.

It is generally supposed, and certainly with reason, that the contagious catarrh, the influenza, is more apt to produce tubercles than that which proceeds from cold, which is probably owing to the greater severity of the former.

I may here mention, by the bye, to save the necessity of recurring to catarrh as a cause of phthisis, that it sometimes excites an inflammation of the internal membrane of the bronchiæ, occasioning a purulent exudation

udation from its surface, which seems sometimes to degenerate into phthisis without ulceration. I have already had occasion to remark, that pus is sometimes expectorated in catarrh. It would seem that this purulent expectoration has now and then gradually increased, without any ulceration of the lungs, and at length becoming copious and in some measure habitual, has given rise to hectic fever. Dr. Cullen and others doubt of such cases having existed, but their doubts seem chiefly to arise from a belief that pus is rarely, if ever, formed without ulceration. Copious and habitual expectorations of phlegm, says Raulin, sometimes become purulent and degenerate into phthisis, particularly after irregularities of diet, or any thing else which impairs the healthy state of the fluids.

Few physicians have been long engaged in practice without meeting with cases in which asthma terminated in phthisis, and that so powerful an irritation applied to the lungs should occasion tubercles in the predisposed, or inflame them where they already exist, does not seem surprising.

It

It has been a common opinion, that syphilis occasions phthisis by producing venereal ulcers in the lungs. This is possible, at the same time there is no direct proof of it, and there are other ways much more probable of explaining the concurrence of these diseases.* The general opinion is, that the syphilitic matter occasions tubercles; and Dr. Cullen seems even to suspect that it may have this effect where there is no predisposition.

It is very doubtful, however, if this matter ever produces tubercles, even in the predisposed. Syphilis seldom occasions phthisis, except in scrophulous habits, and even in these phthisis is seldom the consequence of its first attack. The affection of the lungs rarely makes its appearance till

* Ulcers of the mouth of various kinds sometimes spread to the trachea and lungs; and in this way venereal ulcers seem sometimes to have occasioned phthisis. Inveterate aphthæ of the mouth, (Raulin observes) which proceed from some scorbutic, scrophulous, venereal, or other diseased state of the habit, spread to the pharynx and larynx, and produce ulcers in the œsophagus and trachea, which occasion the symptoms of a confirmed phthisis.

after

after the constitution has been debilitated by repeated attacks of lues. But in such habits, whatever debilitates may have the same effect. The immoderate use of venery has often occasioned phthisis where no venereal complaint had been contracted;* and indeed such causes produce, as I have already had occasion to observe, all the various forms of scrophula. From these circumstances it appears probable, that syphilis only tends to produce phthisis as it tends to debilitate; and we have reason to believe that the very debilitating remedies employed, and often continued for so great a length of time, in syphilis, have no small share in this effect. It appears highly probable, that some other diseases, particularly the scurvy, which have been supposed to occasion phthisis by the application of some peculiar acrimony to the lungs, act in the same way.

Among the exciting causes of tubercles, a mal-conformation of the thorax is one of

* The reader will find excessive venery ranked among the causes of phthisis, by Raulin, Lieutaud, and others.

the most frequent; nor is it necessary that it should go the length of deformity to have this effect. It seems equally pernicious whether it arises from the distance between the spine and sternum, or that between the sides of the chest being smaller than it ought to be. The binding up of children with rollers, and the use of stays, are ranked among the causes of mal-conformation. As any mal-conformation of the bones of the chest renders the breathing less free and slight, irritations applied to the lungs where some irritation already exists will be sufficient to excite coughing; it is not surprising that it should dispose to tubercles. It is a common observation, that those who are subject to coughs from any cause are, cet. par., most liable to phthisis. An habitual tendency to coughs may proceed from a variety of causes. It seems often to arise from tubercles themselves in an indolent state, and very often, we have reason to believe, merely from that peculiar state of the lungs which disposes to tubercles.

In the production of phthisis, too much, perhaps, has been attributed to the agitation

of

of the lungs in coughing. We see the most violent coughs continue for a great length of time without shewing any tendency to produce this complaint. How much more frequently is measles than hooping cough the cause of phthisis. At the same time, where a disposition to tubercles exists, the agitation of the lungs in coughing may tend to produce them.

An inactive sedentary life seems to dispose to tubercles in two ways; by debilitating the system in general, and by the habit of stooping, hurting the lungs in the same way with mal-conformation of the chest. It has been observed, that occupations which confine the body to a bent posture are particularly favourable to the production of this disease.

The free use of intoxicating liquors is a frequent cause of tubercles. All causes of plethora have the same tendency. Suppressed hemorrhagies, the drying up of issues or old wounds, &c. It frequently happens, that where the symptoms of phthisis have been removed by an issue, that they return on drying it up. Although

suppressed hemorrhagies seem frequently to produce tubercles, they oftener, perhaps, induce phthisis, by occasioning hemoptysis. The suppression of the menstrual discharge, hæmorrhois, and epistaxis is most frequently succeeded by phthisis. The retrocession of eruptions is also to be ranked amongst the causes of tubercles.

Bad air is mentioned by writers as a cause of phthisis; and it is probable that it likewise operates by producing tubercles, or tending to inflame them. What was said of bad air when we were speaking of gout is applicable here. Moisture seems still to be the noxious principle. A moist air materially affects the breathing in asthmatic people. It seems likewise to dispose to phthisis by occasioning general relaxation and debility. The frequency of phthisis in Holland has been attributed to this cause. The good effects of sea voyages in this complaint might be urged against the probability of a moist air occasioning phthisis. To this objection, however, the reader will find a sufficient answer in the first volume,

in the section on the causes of intermitting fever.

Breathing a dusty atmosphere seems also to apply such an irritation to the lungs as sometimes inflames the tubercles, if it does not excite them. "I have not," Dr. Cullen observes, "met with many instances of "phthisis which could be referred to expo-"sure to dust; but from Ramazzini, Mor-"gagni, and some other writers, we must "conclude such cases to be more frequent "in the southern parts of Europe."

Phthisis sometimes follows blows or wounds of the thorax. These may occasion phthisis in several ways. In producing tubercles they seem to act in the same way with many of the foregoing causes, by giving a tendency to inflammation of the lungs, which, from whatever cause it proceeds, seems so apt to occasion tubercles in the predisposed.

Among the causes of tubercles too are ranked malignant fevers, and the debility of lungs often left by diseases of the chest, when the patient is too weak wholly to expectorate the matter secreted in them.

 These

These must be ranked with causes of debility. In the latter case, indeed, as in catarrh, the mucus secreted in the lungs may gradually assume the appearance of pus, in consequence of the inflammation of the internal membrane of the bronchiæ, and thus occasion phthisis without either abscess or ulceration.

One cause of tubercles, which appears to me to operate very frequently, has been but little noticed by writers, Raulin and some others mention it, obstructions of the abdominal viscera, particularly an enlarged and indurated state of the liver, cases of which I have known prove fatal, by inducing phthisis, without the practitioner having been aware of the cause which supported the disease. The formation of pus seems in most of these cases at an early period to be unattended with ulceration, sometimes, perhaps, even with tubercles, for I have seen many supposed to labour under phthisis speedily relieved from the most urgent symptoms, by the means which remove the enlargement and induration of the liver. If the case is neglected, however, tubercles and

and ulceration succeed, and then it is too late to afford permanent relief. The manner in which an indurated liver pressing on the lungs may occasion phthisis, is evident.

If contagion is ever the cause of phthisis, it is probably by producing tubercles. It seems less probable that it should give rise to the other changes which precede phthisis, pneumonia, hæmoptysis, &c. Phthisis has not been regarded as contagious till after the purulent stage commences. The reader will find in authors, particularly foreign authors, a variety of cases in which it seems to have been produced by contagion. It is to be observed, however, that as in some countries it is very frequent, and particularly as it is hereditary, it is probable that in many instances it has been ascribed to contagion when it arose from other causes. How far we should attribute its production to the fatigue and anxiety of mind occasioned by attendance on the sick in so tedious and hopeless a disease, it is difficult to say. However this may be, it does not seem improbable that inhaling the fetid breath of a person in confirmed phthisis may prove a

sufficient irritation to excite tubercles in the predisposed, or inflame them where they exist in an indolent state. Phthisis has been regarded as contagious from very early times. It is certain, however, that it is not of a very contagious nature. There are few countries in which this complaint is so common as in Britain; yet Dr. Cullen says, that he has never known it evidently to arise from contagion. Upon the whole, the most probable opinion seems to be, that phthisis is sometimes, though very rarely, produced by contagion in the predisposed; and it does not seem improbable, that contagion has in some degree co-operated with the hereditary disposition to render phthisis so fatal as it is in some families. It is prudent, therefore, in those of a phthisical habit to avoid spending much time, and particularly sleeping in the same bed, with patients labouring under this disease. It appears highly improbable, that the clothes of consumptive patients, as some have maintained, are ever capable of communicating the disease.

Such are the circumstances which occa-

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sion tubercles, in 19 cases in 20 the forerunner of phthisis. I have already had occasion to observe, that it is not easy to determine their presence, at least before they are inflamed. In an inflamed state they occasion the symptoms which have been mentioned as forming the first stage of phthisis.

The following are the symptoms which give reason to suspect their presence in an indolent state. A slight short cough, not easily alleviated by mucilaginous medicines, increased on lying down, either without expectoration or with a scanty expectoration of a viscid matter, or, as Burserius observes, of a matter like water in which soap has been dissolved. When the matter expectorated, says Dr. White, is thin, frothy, small in quantity, and brought up with pain and incessant coughing, tubercles or schirri in the lungs are to be expected; and Baglivi mentions a dry cough and gentle pain of the breast as the chief signs of tubercles in the lungs. The pain is sometimes acute, sometimes it is fixed, more frequently flying, and in most cases very irregular. A degree of dyspnœa

dyspnœa, uniformly increased on using exercise, or by any other cause which accelerates the circulation, is one of the best diagnostics of tubercles. If with these symptoms, the patient becomes languid and indolent and loses his flesh, and some degree of hardness in the pulse, with occasional heat of the skin, is perceived, especially if he be of a phthisical habit, there can be little doubt of the presence of tubercles. They will sometimes continue in an indolent state for many months, or even for years, during which the patient is observed to be more subject to coughs than usual.

It remains to consider the causes of phthisis which operate in some other way than by producing tubercles.

It sometimes happens, it was observed above, that suppuration takes place in pneumonia without immediately proving fatal, nor is it always followed by phthisis. Abscesses often remain for a long time, we have seen, without occasioning hectic fever, There have even been instances in which the pus was absorbed, and the patient restored to health.

health. In general, however, hectic fever comes on and gradually exhausts the strength, if the bursting of the abscess does not occasion suffocation.

When the matter is poured into the cavity of the thorax, it soon produces all the symptoms of phthisis, except the purulent expectoration, and sometimes this symptom also, in consequence of part of the lungs contiguous to the pleura being consumed. When a small abscess from pneumonia bursts into the substance of the lungs, the quantity of matter discharged not being sufficient to occasion suffocation, a purulent expectoration is the consequence; but the chance of recovery is better than in the case of tubercles. If the constitution is healthy, the expectoration sometimes gradually diminishes, and in a short time disappears. "In an abscess of the lungs," Dr. Cullen observes, "in consequence of pneumonia, "the matter poured into the bronchiæ is "often a proper and benign pus, which is "frequently coughed up very readily and "spit out; and though this purulent expec- "toration should continue for some time,

"yet

"yet if an hectic does not come on, the "ulcer soon heals, and every morbid "symptom soon disappears. This has "happened so frequently, that we may con-"clude, that neither the access of the air, "nor the constant motion of the lungs, "will prevent an ulcer of these parts from "healing, if the matter of it be well con-"ditioned. An abscess of the lungs, there-"fore, does not necessarily produce the "phthisis pulmonalis; and if it be followed "by such disease, it must be in consequence "of particular circumstances which corrupt "the purulent matter produced, and render "it unsuitable to the healing of the ulcer, "and at the same time make it afford an "acrimony, which, being absorbed, pro-"duces a hectic and its consequences." Dr. Cullen's opinions concerning the circumstances vitiating the purulent matter in the lungs, are merely hypothetical.

Hæmoptysis is regarded as so frequent a cause of phthisis, that Dr. Cullen, we have seen, ranks the latter as a sequela of the former. In most cases of phthisis some degree of hæmoptysis appears at some period

period of the complaint; and as an ulcer, although the disease proceeds from other causes than hæmoptysis, is often present at an early period, and very frequently occasions a greater or less admixture of blood in the sputa, it is more than probable that many cases of phthisis from other causes are ascribed to hæmoptysis.

It frequently occurs without being followed by phthisis, even when it proceeds from internal causes, much more when it arises from blows on the chest, or other external causes. In many people it recurs often, without being productive of any bad consequence. It is chiefly in the predisposed that it is apt to occasion phthisis, and indeed in the predisposed to phthisis that it most frequently occurs; a circumstance which still further contributes to its being regarded as the chief cause of this complaint. It is not to be overlooked, however, that when hæmoptysis frequently recurs, it may occasion ulceration in the most healthy.

It is supposed by some, that it occasions phthisis in consequence of some portion of the

the extravasated blood which is not expectorated, stagnating and becoming putrid in the cells of the lungs. It is not impossible that hæmoptysis may produce phthisis in this way. In most cases, however, as the latter is the consequence of repeated hæmoptysis, it seems probable that it arises from the vessels which have been frequently ruptured not healing readily, particularly in lungs inclined to disease.

Pus absorbed from other parts of the body, and deposited in the lungs, has been ranked among the causes of phthisis.*

The only remaining cause of this disease of any note is the formation of calculi in the lungs. It was observed, that these are

* Many doubt whether phthisis ever proceeds from this cause. Raulin relates a case in which the scrotum was wounded, and a considerable discharge of pus took place. This discharge gradually diminished, and the patient at the same time was seized with a frequent and troublesome cough, and began to expectorate pus, as Raulin calls it, "très caracterisé." But on bringing back the purulent discharge, the cough and expectoration ceased. The man died of the wound, and the lungs were found sound, and without the least mark of any suppuration having taken place in them.

sometimes

sometimes met with in the sputa of phthisical patients. Their formation generally precedes the phthisical symptoms, and seems often to produce them. They may sometimes do so by inducing tubercles, which may be occasioned by any irritation of the lungs; but they excite phthisis, where there is no disposition to tubercles, merely by wounding the lungs. In cases of this kind the symptoms of phthisis are sometimes never completely formed, and then the termination is often favourable, if the causes of inflammation are carefully avoided.

It is a curious circumstance in the history of phthisis, that its progress is often interrupted by pregnancy or mania. The latter has been known to produce a radical cure, but almost always after delivery; and often after the removal of the mania, the disease recurs.

Of all the causes of phthisis, tubercles, as may be collected from what has been said, are the most fatal. Dr. Cullen thinks, and there is reason to believe, that there have been recoveries after the suppuration of a tubercle. They are extremely rare, and only,

only, perhaps, in cases where the ulceration is very recent.

SECT. IV.

Of the Treatment of Phthisis Pulmonalis.

IT has been common with those who have written on the treatment of phthisis, to lay down certain indications of cure, which we have no means of fulfilling; that of correcting the vitiated state of the fluids, of curing the ulcer in the lungs, &c. which has often led to error.

Our views in the general treatment of phthisis are, to obviate the inflammatory tendency, and support the strength. After speaking of the means of fulfilling these indications, it will be necessary to notice certain remedies recommended as specifics in this disease, which do not come under any particular head; and, lastly, to consider the means of removing certain symptoms which occur at different periods of phthisis, and whose treatment does not fall under the general plan. In the first place, then, we

we are to consider the means recommended for obviating the inflammatory tendency.

This indication, the reader will readily perceive from the history of the disease, has place only at an early period. There are three means of fulfilling it; by evacuations, by the use of acids and neutral salts, and by an attention to regimen.

Two objections to the employment of blood-letting in phthisis present themselves: that it is a disease of much debility, and that being often of long continuance there is reason to fear a tendency to plethora, which will aggravate the symptoms, and render a more frequent employment of blood-letting necessary than the practitioner is at first aware of.

It has been the practice of many to let blood in this complaint on very slight occasions. Some have not scrupled to recommend it two or three or more times in a week, and to persevere in its use while there are any remains of the buffy coat in the blood; another instance in which an attention to this appearance, without consi-

dering the other circumstances of the case, has led to erroneous practice.

The danger of recommending the most debilitating of all remedies where debility is the most urgent symptom, is too apparent to require any comment. It is now employed much more sparingly than half a century ago. When, however, the pain is severe, the breathing difficult, and the pulse unusually hard, a moderate blood-letting is often proper; but it must never be carried further than is necessary for the relief of these symptoms, and it will generally be proper in the first place to try the effect of local blood-letting, (on the use of which in this disease I shall soon have occasion to speak more particularly) as it interferes less with the second indication, at all times to be kept in view in the treatment of phthisis. The symptoms just mentioned are such, it is evident, as can only attend an early period. It is almost unnecessary to say that when the expectoration has become purulent, and the night sweats profuse, loss of blood in any way is inadmissible. We have in view at an early period to procure a resolution

resolution of the inflamed tubercles; in confirmed phthisis this hope no longer exists.

What has been said of blood-letting is in a great measure true of catharsis when employed with a view to lessen excitement. Sydenham recommends the free use of cathartics at the commencement of the disease, and if it ever is proper it is at this period. Blood-letting, however, is more effectual, and on several accounts is preferable, for the purpose of moderating excitement. In inflammatory affections of the lungs, in particular, much catharsis is seldom advisable. The use of cathartics in phthisis, therefore, should be confined merely to such as are necessary for the regular action of the bowels, which is a matter of great importance in this disease. The saline medicines, I shall presently have occasion to mention, are the best cathartics at an early period.

Diaphoretics have also been much recommended when the excitement is considerable. Of these the antimonium tartarisatum is the best. It has the double advan-

tage of allaying the febrile symptoms and promoting the expectoration. Its debilitating effects, however, prevent the free use of it in phthisis. It is only when the skin is hot and dry that it can be employed; and, indeed, it is only at an early period that any medicine of this kind is proper. Sassafras and sarsaparilla have been frequently used as diaphoretics in this disease, but are very insignificant remedies; and guaiacum, which has also been much recommended, is of too irritating a quality.

Vomiting has been recommended as a specific in phthisis, and shall be considered with the other remedies of this kind.

In the employment of all evacuations used with a view to diminish excitement in phthisis, much attention to the habit of the patient is requisite.*

Of

* "Nor would", Sir John Pringle (who made much use of the lancet in the commencement of phthisis) "recommend this mode for common practice without "making great allowance for the strength of soldiers, "nor without suiting the quantity of blood to be let, "to the condition of weaker patients. In habits "naturally weak and scrophulous, or when the patient

"has

Of the acids and neutral salts, nitre and the saline mixture in a state of effervescence at an early period, the vitriolic acid when a tendency to sweating has supervened, and at all periods, fresh acidulous fruit are the best. I have at different times had occasion to make some observations on the manner of using nitre, and the effects to be expected from it, most of which are applicable here. It should be used in a very diluted state, and never in such quantity as to oppress the stomach. Dr. Percival says, that although the pulse in hectic fever is at first reduced by the use of nitre, it afterwards rises higher than before. I have not observed the latter effect from a moderate use of it. Sal ammoniac has been much recommended by some writers either alone or with nitre, but is much inferior to the latter. Dr. Cullen thinks the vegetable acids preferable to the mineral, as they are safer and can be taken in larger quantities. This observation applies only to the early

"has been long in a decay, bleeding, like other "means, will be ineffectual." He might have said will hasten the fatal termination.

periods of the disease; after the sweats come on, no acid is equal to the vitriolic.

I shall have occasion to speak of the diet of phthisis when considering the means of fulfilling the next indication. Here I am only to point out that suited to an early period; and all that need be observed is, that while there are hopes of resolving the inflammation of the tubercles, the diet should so far co-operate with the other means employed for this purpose, that the patient should avoid those kinds of food which occasion much irritation, particularly the flesh of old animals. But there is no period of phthisis, perhaps, unless the symptoms approach to those of pneumonia, where the diet should be very spare. A milk diet, therefore, is proper at an early period, and, indeed, almost universally recommended. There are few cases in which a certain quantity of the lighter kinds of animal food may not be added to this diet, which consists of different kinds of milk with the farinaceous vegetables. Fresh subacid fruits make a useful part of the diet in phthisis, particularly when

when the excitement is considerable. If the patient is troubled with any redundancy of bile, they tend to correct it, and proving gently laxative, they cleanse the intestines. If they occasion diarrhœa, it must be checked by mild astringents and anodynes. Hoffman even declares, that he has seen confirmed phthisis removed by large quantities of strawberries.

The mineral waters impregnated with carbonic gas, or common water combined with a large quantity of this gas, have been recommended for the drink of phthisical patients. The good effects of these waters, if they have any that deserve to be mentioned, seem to arise from the effects of the gas on the stomach, to which it is particularly grateful. Very brisk small beer will generally answer the same purpose, if it does not occasion acidity,

Much attention has been paid to the choice of milk in phthisical cases. Cows and goats milk, if used in considerable quantity, oppress the stomach, so that the lighter kinds of milk, particularly that of asses, have been preferred. Asses milk is

 supposed

supposed by many to serve other purposes besides those of nourishment in this complaint. How far this opinion is well founded it is difficult to say. Women's milk has, if possible, been more celebrated in phthisis. Van Swieten, Dr. Robinson, and others, relate cases in which they ascribed the removal of the disease wholly to it. Mares' milk has also been much recommended. In short, the great objects aimed at in the diet in the first stage of phthisis is, that the food should be nourishing, easy of digestion, and afford as little irritation as possible while digestion goes on.

Such are the means of fulfilling the first indication of obviating the inflammatory tendency. The reader will perceive, that in attempting this in phthisis we have it more in view to save and support the patient's strength, than in the other inflammatory diseases which have been treated of. This seems to arise from the scrophulous nature of tubercular inflammation being so immediately connected with a debilitated state of the system, that every cause of debility, as we have seen, may excite it.

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The same observations, both with respect to the causes and mode of treatment, apply to the more external inflammations of scrophulous habits. We are now to consider the means employed with a view to strengthen the system. This indication, as I have already had occasion to observe, applies chiefly to the more advanced periods of the disease. It is fulfilled by an attention to diet, exercise, and climate, and by the use of tonic medicines.

Physicians have always had in view the inflammatory nature of phthisis, although in many cases, particularly in advanced stages of the disease, it partakes very little of this nature. This has led them to pay too little attention to the general debility of the system, its most striking feature. Many observations seem to contradict certain rules, once received as established maxims, in the treatment of phthisis, and to demonstrate that a more invigorating plan than has generally been adopted is proper. Nor is this plan necessarily confined to the purulent stage. It sometimes happens, that even from a very early period the excitement is

inconsiderable

inconsiderable and the pulse soft; wherever this is the case, the means of fulfilling the indication we are considering are applicable. Much harm has been done by the indiscriminate employment of a low diet, and other debilitating measures, in this disease.

In all cases of phthisis, perhaps, where there is little increased excitement, where the pain is inconsiderable and the pulse tolerably soft, the fullest diet which the patient's stomach will receive is the best. If it be found to increase the exacerbations, it will be easy to change it for a milder diet, but in such cases it will rarely be found to have this effect. In this diet a moderate use of wine is included. Here, as perhaps in all cases of chronic debility, the wine should be more or less diluted. When properly employed, such a diet, instead of increasing, relieves the pain, cough, and febrile exacerbations. In a treatise by Dr. May, the reader will find some cases in which the good effects of an invigorating diet are apparent. I have myself witnessed them in many instances, and have even seen the removal of what was supposed

supposed to be confirmed phthises the consequence of it. In the purulent stage, in which every thing in general fails to remove the disease, it always gives more or less relief. If beef and mutton irritate too much, for even these in many cases are not improper, the milder kinds of animal food should be chosen; and although the patient should be restricted with respect to the quantity taken at one time, he may be allowed to take them frequently in the course of the day, avoiding them, however, in the evening, when they are most apt to increase the exacerbation. While the excitement is considerable it is proper to study the patient's ease as much as possible. Exercise, therefore, should be avoided; on this account it was not mentioned among the means of fulfilling the first indication. It makes an essential part of those employed with a view to strengthen the system.

Many of the observations made on sleep and exercise, in the section on the mode of treatment in the intervals of intermitting fever, are applicable to phthisical cases. I shall

shall here make a few additional observations particularly applicable to these cases.

With regard to sleep, there is little to be added to what was said in the passage referred to. The cough sometimes prevents sleep, even when the patient is most inclined to it. While the excitement is considerable, the employment of opiates is in some degree a doubtful practice; although it is seldom such as wholly to exclude their use combined with that of saline medicines. At other times they may be given more freely. They are the most certain means of allaying the cough, and thus doubly dispose to sleep. Wherever a full diet is judged proper, opiates may be used as freely as the state of the stomach will admit of.

I have already had occasion to make some observations on the manner in which opiates promote expectoration, by seeming at first to interrupt it. In the advanced state of the disease, opium tends to increase the sweats; but this effect can generally be counteracted by the use of astringents, and the relief they afford more than compensates for any tendency of this kind. I shall

soon

soon have occasion to consider more particularly the means employed for the purpose of relieving the cough.

With respect to the exercise of phthisical patients, what chiefly demands attention is, that it shall be such as may be continued for some length of time without fatigue. Gestation of various kinds, therefore, is preferable to any kind of exercise in which the muscles of the body alone are exerted. Much exercise of the muscles is also hurtful, by increasing the velocity of the circulation, and consequently the dyspnœa.

Some having observed the bad effects of fatigue, have proposed wholly to strike out exercise from the catalogue of remedies in this complaint, or only to recommend it during convalescence. A very extensive experience, however, of the effects of exercise in phthisis, as well as analogy, leads to a very different conclusion; and it is of much consequence to determine the kinds of exercise best suited to phthisical cases.

No exercise has been so celebrated in this complaint as riding on horseback, and Sydenham's authority has contributed to render

render it a general practice. Riding on horseback, he observes, provided it be continued for a sufficient length of time, is far preferable to every other exercise in phthisis; and he adds, what we have to lament experience has not confirmed, as it has many of Sydenham's observations, "Sane haud "multo certius cortex Peruvianus febri in-"termittenti, quam in hac ætate equitatio "phthisi medetur." In other passages he speaks of it in language equally strong. He remarks, that in those who were cured of phthisis in this way, a tumor rose in the neck not very different from scrophulous tumors.

It is now pretty generally admitted, that neither riding on horseback, nor any other kind of exercise, can be regarded as any thing more than assistants in the cure of consumption. An indiscriminate use of any particular exercise in this complaint is improper; the degree and kind must be suited to the patient's strength. It sometimes happens, that riding on horseback increases the dyspnœa, and occasions pains in the breast. When it has these effects,

or

or when it is attended with fatigue, it must be changed for more gentle exercise, and riding in a carriage is often beneficial. It frequently happens, that even this is too fatiguing. "All the modes of gestation," Dr. Cullen observes, "that are employed on "land may fall short of the effects expected "from them, because they cannot be "rendered sufficiently constant, and there-"fore it is that sailing, of all modes of "gestation, is the most effectual in pneu-"monic cases, as being both the smoothest "and most constant."

There has been much difference of opinion respecting the circumstances to which the benefit derived from sea voyages ought to be ascribed. Many, with Dr. Cullen, ascribe it to the constant and moderate exercise; others, to the purity of the sea air, and the constant change of air. If the benefit derived from change of air, except it be to a purer air, or one different in temperature or moisture, ought to be ascribed to the occupation of the mind and cheerfulness occasioned by a constant variety of scene, as seems highly probable; it

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is not likely that much is to be attributed to a change of air in sea voyages, unless the ship is bound to a more southern latitude.

Some have ascribed much of the good effects of sea voyages to the smell of the tar and rosin of the ship, and many to the sea sickness and vomiting. We shall afterwards find that vomiting excited by other means is sometimes beneficial. On the cases enumerated by Dr. Gilchrist, Dr. Reid, who attributes all the benefit of sea voyages in this complaint to the sickness and vomiting, observes, "The patients were generally sea sick, and vomited much bile; "and in some the good effects ceased when "they grew familiar to the ship's motion, "and were no longer sea sick, He relates "the case of a consumptive patient who "went to sea three times, the distance ten "leagues; each time he was sick, vomited "bile, and was cured of his disease. In "the last, where the patient was at sea "only five or six hours, the effects could "not proceed from the air or exercise." Dr, Carmichael Smith, on the other hand, in his treatise on the effects of swinging as

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a remedy in pulmonary consumption, observes, that if the benefit derived from sailing were owing to the sickness and vomiting it occasions, its good effects ought always to be in proportion to these. But this, he maintains, is so far from being the case, that he has seen the greatest benefit from sailing where the patients were either little or not at all affected with nausea and vomiting; while, on the other hand, patients have been much affected with both during the whole time they were at sea, and yet neither the cough nor hectic fever abated.

Dr. Smith attributes the benefit derived from sailing merely to the motion, or what expresses his meaning more accurately, if I understand it, to the constant change of posture, both to one more or less bent, and from or towards the horizontal posture.

It is probable that the same circumstances in sailing may not be equally beneficial in every case. Their effects, in all probability, in some degree depend on the cause of the disease; a circumstance which seems to have been overlooked by those who have

made observations on this subject, and to which their difference of opinion may partly at least be ascribed. In many cases it seems probable that the good effects of sailing are not to be ascribed to any one, but a combination of all its circumstances, particularly to that of the sickness and constant gentle exercise.

Swinging has been much recommended in phthisical cases by Dr. Carmichael Smith, who says, that during this exercise the cough is suspended, and the frequency of the pulse generally diminished, after the patient has been in the swing about ten minutes. And fourteen cases, he thinks, were cured by this remedy. The patient was generally in the swing from ten minutes to half an hour at a time. Others, however, have not met with the same success. "We are sorry to add," Dr. Duncan observes, after giving an account of Dr. Smith's treatise, in his Commentaries for the year 1788, "that from our own experience we cannot say much in favour of swinging. Since the publication of Dr. Smith's treatise we have had recourse to

" it

"it in a considerable number of cases. In "some few, where there were symptoms "giving a presumption of phthisis, benefit "seemed to arise from it; in others, though "employed at a period when the symptoms "were very slight, it had no influence "either in checking the progress of this "insidious disease, or in preventing its fatal "conclusion. And, indeed, we have not "met with any one case where phthisis had "decidedly taken place, in which any ma-"terial benefit arose from its employment. "With some patients the sickness it occa-"sioned was so distressing, that they could "not be prevailed upon to give it a proper "trial; while with others it produced no "obvious effect whatever, and particularly "no change on the state of the pulse." The experience of others has probably been conformable to that of Dr. Duncan, as the remedy has not come into general use.

Of exercise in general it may be observed, that it is of great consequence to begin with that which may be used without fatigue, by degrees using a little of the stronger ex-ercises as the strength will admit of it.

 With

With regard to climate, it has always been observed that phthisical patients are more or less relieved by the summer, their complaints generally increasing as the winter comes on, gradually becoming worse during the winter and spring, particularly the latter season. This, together with phthisis being rarer in warmer climates, suggested the propriety of sending those afflicted with this disease to such climates; and when the change has been made at an early period, it has often been successful. In most instances, however, it is delayed too long to be of any advantage.

The exhausting heats of sultry climates have not, for reasons sufficiently evident, been judged proper for phthisical patients. They are recommended to visit the mild climates of Madeira, Sicily, Italy, Spain, or the southern parts of France. Whatever climate is preferred, as much uniformity of temperature as possible should be studied. Wearing flannel next the skin tends both to support the perspiration in cold weather, and to prevent sudden chills when the weather is warm. Nor are the sweatings

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in this disease much, if at all, increased by this practice. The patient may be kept cool by having the rest of his clothes light, and (in warm climates) the flannel of a very thin texture. It also prevents the bad effects of damp linen next the skin; and every thing which tends to prevent catarrhal affections is of the first importance in the treatment of phthisis. It is particularly necessary, whatever the clothing be, to avoid any sudden exposure to cold and going into the night air.

We are now to consider the last means of fulfilling the indication before us, namely the use of strengthening remedies. Most of the articles of the materia medica which have been recommended in phthisis, have been employed as specifics. Those which deserve attention I shall afterwards have occasion to notice, and shall here confine myself to a few observations on such remedies as seem to act by strengthening the system in general; the bark, iron, cold bath, zink, and vitriolic acid. Among this class of medicines may be ranked most of the mineral waters recommended in phthisis.

It is not surprising that in a complaint which has been so generally treated as merely inflammatory, that the use of the bark should have been very generally reprobated, especially as tubercles have by many been regarded as of the same nature with obstruction in the liver, spleen, &c. for the production of which it has, we have seen, erroneously been blamed. Many, Raulin, Desaulet, &c. have for these or similar reasons, condemned the bark without a trial. Others have condemned it from having found it increase the exacerbations, anxiety, and dyspnœa. Even these writers, however, seem too hastily to have decided against the use of the bark in phthisis. It is true that these bad consequences often attend its use, but this is chiefly when the inflammatory tendency is considerable. When such are its effects, it ought to be immediately laid aside. The cases in which most benefit is to be expected from it are those in which the debility is great and the remissions well marked, so that the disease has more of the intermitting form than hectic fever generally assumes.

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" In some cases," Dr. Cullen, who is no advocate for the use of the bark in phthisis, observes, " when the morning remissions " of the fever were considerable and the " noon exacerbations well marked, I have " observed the Peruvian bark given in large " quantities with the effect of stopping " these exacerbations, and at the same time " of relieving the whole of the phthisical " symptoms: but in the cases in which I " observed this the fever shewed a constant " tendency to return, and at length the " phthisical symptoms also returned and " proved quickly fatal." In the first volume of the Medical Communications the reader will find cases of this kind more successfully treated with Peruvian bark by Dr. Samuel Chapman. It appears, however, that the use of the bark in phthisis is not to be confined to the foregoing cases; where the remissions were far from being very remarkable, the bark has been successful. Burserius speaks of its use in phthisis in the highest terms. Its wonderful virtue, he observes, is most remarkable in those who in their youth laboured under scrophulous

swellings. I have already had occasion to observe, that in such exhausted habits the excitement is generally inconsiderable. The Peruvian bark has also been much praised where there is considerable admixture of blood in the sputa. In such cases I have myself known it of great use. Upon the whole, experience seems to be wanting on this part of the subject; but from the trials which have been made, as well as from phthisis partaking so much of the nature of scrophula, in which the bark is often of great service, it seems to demand more attention than it has received from the practitioners of this country.

Less is to be expected from the use of iron in phthisis. It produces some of the effects of the bark, and is, perhaps, less apt to increase the oppression, dyspnœa, and febrile exacerbations. It has been chiefly recommended when the symptoms seem to arise from amenorrhœa, the constitution is relaxed, and the inflammatory symptoms very moderate, and in these cases it is generally combined with some gently stimulating medicine, particularly myrrh, of which and

similar

similar medicines I shall presently have occasion to speak.

Iron has been frequently employed in phthisis in the different mineral waters. Physicians, says Raulin, who have had most experience of pulmonary consumption, have recommended the use of ferruginous mineral waters in the earlier stages of this complaint. I have seen these waters, he adds, have good effects chiefly in the phthisis from tubercles. These cases were probably of the same nature with those in which Burserius recommends the bark. The reader will find, in a variety of authors, different mineral waters recommended in this complaint. In this country they seem to have lost their credit. It is most probable, indeed, that the change of scene, often of climate, and the amusements and regular exercise which frequently attend their use, have contributed to raise their reputation in this as well as many other complaints. In the generality of phthisical cases the furruginous mineral waters are too stimulating, and on this account many practitioners have wholly condemned their use.

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The cold bath has been recommended by Dr. Rush and others. If it is ever admissible, it is in the cases in which bark and steel are recommended. In these, however, the debility is often such as to preclude its employment; and, upon the whole, most practitioners have been afraid to make a trial of so doubtful a remedy.

Zink has been much praised as a tonic, particularly by Dr. Percival, in phthisical cases. Of what service this remedy may prove, future experience must determine. Of the vitriolic acid I shall soon have occasion to speak, as a principal means of checking the tendency to sweat.

Such are the means of fulfilling the indications which regulate the practice in the different stages of phthisis. I am now to make some observations on certain specifics which have been recommended in this complaint.

I have already hinted, that emetics have been employed as a specific in phthisis.*

* See the observations of Dr. Reid and Dr. Fort Simmons on this complaint, a paper by Dr. Senter in the first volume of the Transactions of the College of Physicians at Philadelphia, &c.

From the debilitating effects of emetics we should, a priori, suppose, that their frequent repetition must prove injurious in phthisis; yet even the daily use of them seems sometimes to have been found beneficial. How they operate it is difficult to say. "People at first," Dr. Reid observes, "are "apt to be alarmed, fearing that by taking "vomits every day the tone of their sto- "machs will be injured; but I can safely "affirm, and I am warranted to do so by "the best of all tests, experience, that I "never saw any bad effects from a course "of this kind continued for weeks with "proper precautions; on the contrary, I "have scarcely met with one instance "where the general health was not essen- "tially improved." In the earlier periods Dr. Reid sometimes used the antimonium tartarisatum, at other times ipecacuanha. The sulphate of zinc, as the most speedy and easy in its operation, is perhaps the best in this case. I have known this used daily for a considerable time with advantage. Dr. Senter used the sulphate of copper with ipecacuanha.

Emetics

Emetics seem best adapted to cases attended with considerable excitement, and consequently to the earlier stages of the disease; but respecting this part of the subject future observations must determine. It is not easy to believe that emetics can have any effect that will compensate for their debilitating tendency.

Since the days of Morton, who recommended a variety of balsams in phthisis, these have generally formed part of the treatment of this disease. Dr. Fothergill was among the first who opposed their use in phthisis, and they are at present falling into neglect in this country. Burserius and many others of the latest and best foreign writers still place much reliance on them. Van Swieten observes, that as balsams are very efficacious in curing external ulcers, physicians recommend them in the cure of ulcers of the lungs. The best physicians, he continues, use the native balsams; that of Mecca, for instance, Copaiva, and Peru, in preference to the artificial balsams so celebrated by the chymists. Boerhaave also condemns the latter, which have been called

balsams of sulphur, and are prepared by dissolving sulphur in expressed or distilled oils. Many however, particularly the late writers of this country, regard them as equally useless or hurtful with the artificial. Sir John Pringle made a full trial of the balsams of Peru and Copaiva, and seems at first to have been prejudiced in their favour; yet he observes, that he has, since the former editions of his work, been so often disappointed in the effects of these balsams in phthisis, that he had wholly laid them aside. "The balsams, whether natural or "artificial," says Dr. Cullen, "which have "been so commonly advised in cases of "phthisis, appear to me to have been pro-"posed on no sufficient grounds, and to "have proved commonly hurtful. Along "with balsams of all kinds may be classed "the various resinous gums, which have "been recommended in phthisis, generally "with the same view, and seldom with "better effects." Dr. White, of York, speaks in still stronger terms, reprobating the balsams of Copaiva, Peru, Tolu, and Benjamin, turpentine, opobalsam, gum ammoniac,

ammoniac, guiacum, myrrh, storax, olibanum, and all their preparations.

The observations of these writers are, perhaps, too indiscriminating. We have reason to believe that in some debilitated and languid habits, medicines of this kind may occasionally be useful; I have myself made a trial of some of them, particularly of the storax combined with opium, with good effects. Dr. Fort Simmons warmly recommends the balsams of Copaiva and Peru; and Dr. Saunders and Dr. Percival speak highly of the effects of myrrh.*

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* A young lady, Dr. Percival observes, in the 2d vol. of his Essays, was, in the spring of 1785, affected with pulmonic complaints which threatened a phthisis. As they were accompanied with great languor and debility, he gave a solution of 12 grains of myrrh every six hours in a saline effervescing draught, marking the effect on the pulse with anxious attention.

"I shall transcribe from my notes," he continues, "only the first observation which I made, because "each subsequent one was similar in result. April "20th, half past seven o'clock in the evening, pulse "120, feeble. The draught administered. Ten "minutes before eight, pulse 98, stronger and fuller. "Half past eight, pulse 100. By perseverance in the "use

The truth seems to be, that physicians in quest of some specific that shall at all times remove the symptoms of this disease, have not in general been sufficiently attentive to adapt their remedies to the circumstances of the case, but have often used the same in all cases indiscriminately. The consequence of which has been, what might have been expected, the same remedy has done both good and harm.

"use of this remedy and other auxiliary means, the "young lady happily recovered."

"Myrrh," he observes in another place, "may very "commodiously and with good effects be combined "with nitre. I regard this remedy," he adds, "as the "most useful which modern practice has adopted in "consumptions." Others, however, have not met with the same success from the use of this remedy. Dr. Cullen says, that myrrh has not appeared to him to be of any service in phthisis, and in some cases to have proved hurtful. There is the same difference of opinion respecting the use of camphire. From this, perhaps, less is to be expected. Tar water is another remedy of this kind, which has been much celebrated. But the observations respecting it are not sufficiently accurate to enable us to form any certain judgment respecting its effects. One observation seems to apply to all this class of medicines, that wherever they heat and irritate, they do harm.

Mercury

Mercury has been recommended as a specific in phthisis, but in general with little success. Dr. Cullen says, that in many trials which he made with it, it proved of no service, and generally appeared to be manifestly hurtful. Dr. Ryan remarks, that although the remedy had never been employed in phthisis, its pernicious effects in other scrophulous cases would have left little hopes of its proving useful in this disease. The justice of this observation may be called in question. Modern practice has pointed out certain cases of scrophula, in which an alterative course of mercury is employed with much advantage.

"If there are any grounds," the author just mentioned observes, "for suspecting "that the syphilitic virus is the cause of "the disorder, then mercury is to be administered without further hesitation." If what was said when we were speaking of the causes of phthisis be just, the syphilitic virus never produces phthisis, except in those very rare cases in which a venereal ulcer spreads from the mouth to the trachea and lungs. If venereal complaints tend to

produce

produce phthisis only as they occasion general debility, as appears highly probable, the exhibition of mercury may even be more pernicious in these cases than where the debility is less. Mercury, indeed, has been chiefly employed in phthisis where the concurrence of syphilis rendered it necessary. And its effects in most of these cases have been such as to dissuade from the use of it where phthisis is the only disease. No means employed in phthisis better illustrate a remark just made on the impropriety of an indiscriminate use of any medicine in this disease. In the generality of cases the only effects of mercury would probably be that of hastening the fatal termination. Yet in one variety, I have, in repeated trials, found it the best remedy, and have seen the patient saved by it almost in the last stage, after the purulent expectoration and hectic fever were completely formed; I allude to the cases occasioned by an enlarged and indurated state of the abdominal viscera. I have already had occasion to observe, that this cause of phthisis has been very generally overlooked, which is pro-

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bably the reason that, as far as I recollect, no author has pointed out this variety of the disease as that in which mercury is useful.

I have also employed it with advantage in the incipient stage of phthisis, attended with a scrophulous affection of the lymphatic glands of the abdomen. There is reason to believe, I think, that an alterative course of mercury may be of service in the removal of indolent tubercles.

From the effects of cicuta in resolving indolent swellings, even such as are evidently scrophulous, it has with much plausibility been recommended for discussing tubercles. It has been so seldom employed in phthisis, however, that its effects are not ascertained. Dr. Cullen, in his lectures on the treatment of phthisis, we are informed by Dr. Ryan, used to recommend to his pupils a trial of the cicuta and coltsfoot when there was reason to suspect the presence of tubercles. He did not speak from any trials he had made, but thought it probable that these medicines might be of service. Coltsfoot has been employed for resolving

scrophulous

scrophulous tumours; but, upon the whole, with little success.

Among the medicines of this kind may be mentioned the kali, which has not perhaps in phthisis met with all the attention it deserves.

I may refer to the works of Burserius and other foreign writers for a variety of specifics employed in this disease. Some of them are innocent, and this, perhaps, is the most favourable account that can be given of them.

The lichen islandicus has been much celebrated.* After being steeped in water for some time, it is used as an article of diet in phthisis. I have repeatedly made a trial of it without any advantage.

The flesh and broth of vipers have ever since the days of Galen been a favourite remedy, and are even recommended in various cases by Mead, Morgagni, De Haen, and others. In this country their credit has only been established among the vulgar.

* See Observations on Pulmonary Consumption, and the Use of the Lichen Islandicus in that Disease, by J. B. Regnault.

It is hardly worth while to mention among the specifics in phthisis the earth bath. It may, perhaps, seem strange, Van Swieten observes, that I should ascribe any peculiar efficacy in the cure of phthisis to the effluvia arising from the ground. But I have been informed, by a person highly deserving of credit, that through the whole kingdom of Grenada they attempt the cure of phthisis by an earth bath, and I have since read the same thing in the works of Francisco Solano de Luque, who declares that he used the earth bath with success even in cases deemed incurable. A hole is dug in the earth, and the patient put in, covered with earth up to the neck, and left there till he begins to shiver. As soon as he comes out he undergoes a general friction.*

In considering the different phlegmasiæ we found that certain medicines which tend to lessen the force and frequency of the pulse, have been found beneficial; one of the

* The reader may also consult the end of Dr. Simmons's Treatise on Phthisis, where he will find some cases in which this remedy was employed.

the chief of which is the digitalis, which seems often useful in the same way in the early stages of phthisis. I did not, however, mention this remedy among the means of relieving the inflammatory stage, but referred it to be mentioned here, as it has been recommended as a specific at all periods of the disease. But from every trial I have made with it I have reason to believe, that it is only beneficial in the inflammatory stage, and acts there in the same way as in other inflammatory complaints. It will at all times, indeed, diminish the frequency of the pulse, but after the purulent stage is completely formed, it seems never to produce any considerable or permanent good effects, and often by its debilitating tendency, to do harm. I give the result of my own experience with the more confidence because it agrees with that of many on whose judgment I rely.

The effects of a remedy which has lately demanded much of the attention of the medical world, seem in many respects analogous to those of the digitalis; I mean an atmosphere in which

the usual proportion of oxygen has, by various means, been diminished. This too, which has been proposed as a remedy at all periods of the disease, is only useful, it would appear, by lessening the inflammatory tendency. In an early stage of phthisis we have reason to believe that it is beneficial; and even after the purulent stage has commenced; but while the pulse still retains a degree of hardness, any innocent means which obviate the inflammatory tendency are often of service. But, as in the case of digitalis, after the purulent stage is completely formed, anti-inflammatory measures are no longer proper, little or nothing is to be expected from it. This account of the effects of a lowered atmosphere in phthisis seems not only the result of experience in the disease, but is also supported by many of the experiments of the French and other chymists, from which it appears, that the oxygenous part of the atmosphere tends to support inflammation, and that breathing a pure oxygenous atmosphere will excite it.

It is needless to enter into any detail of

certain

certain ingenious opinions respecting the modus operandi of this remedy, and the supposed hyperoxygenation of the blood in phthisis. It is enough to say, that any person who, without prejudice, reviews the symptoms of the disease, will be satisfied that this hypothesis is as fallacious as, we have reason to believe, many of the modes of practice which have been founded on it.

If what has just been said be accurate, it reduces the value of a lowered atmosphere, as a remedy in phthisis, to very little; since it is only to be classed among the means of lessening the inflammatory tendency, many of which are equally certain in their effects, and far more easy in their application. There is no indication in phthisis so easily answered as that of lessening the inflammatory tendency. At the same time it must be confessed, that further observations seem wanting fully to establish the truth of the foregoing remarks; and whatever the result may be, society must feel itself indebted to those who are, by troublesome and tedious experiments, endeavouring to

ascertain the value of a remedy which seemed at first to promise so much.*

May not lessening the quantity of oxygen in the air be of much importance in certain cases of pneumonia, where the usual means of relief have failed, or the patient's strength is too far reduced to admit of much venesection? And is there not reason to believe, that the application of oxygen gas to external ulcers, in which the inflammation is too languid, may prove beneficial?

The only part of the treatment of phthisis which remains to be considered, is that of certain symptoms which attend this disease, the particular treatment of which does not fall under the general indications of cure. The chief of these are coughing, suppressed or difficult expectoration, urgent dyspnœa, pains of various kinds in the thorax, vomiting, profuse sweats, and diarrhœa.

The most effectual means of relieving the cough, anodynes, I have already had occasion to mention. There are few cases

* See the various publications of Dr. Beddoes on phthisis.

of

of phthisis in which they may not, to a certain extent, be employed at every period. In advanced stages of the disease the excitement is never such as to render the exhibition of opiates a doubtful practice; and the relief they afford renders them proper when there is no longer hopes of permanent advantage from any remedy.

Many other medicines have been recommended, with a view to relieve the cough in phthisis. The best of them consist of mucilaginous fluids, either prepared by decoction from vegetables, or by dissolving gum arabic or tragacanth in water. It was at one time customary to give very large quantities of such medicines. In modern practice they are, perhaps, used too sparingly. They seem to serve a double purpose, that of besmearing the fauces, and that of lining as it were the stomach and bowels; in both ways often preventing an irritation which excites the cough. For the former purpose they should be given in small and repeated doses; for the latter they must be given in larger quantities. When given in very large quantity, however, they often oppress

oppress the stomach. This is particularly the case with the solution of the gums just mentioned. Of the decoctions none is better than water gruel or rice water, which ought always to form part of the diet in phthisis.

To the same head belongs a variety of oily substances, the chief benefit derived from which seems to be merely that of besmearing the fauces. These are the most objectionable, as they are the most oppressive to the stomach of this class of remedies. They are never to be given in large doses, but I have found considerable advantage from combining small quantities of them, particularly of the spermaceti with the mucilaginous mixture used for the purpose of allaying the irritation in the fauces.

Such a mixture, with the addition of a small quantity of opium, appears to me the most powerful of all medicines for allaying the cough in phthisis. It should be kept near the patient, and about half a tea spoonful swallowed as often as the irritation which excites the cough is troublesome. Merely a bit of gum arabic or tragacanth

kept

kept in the mouth is often a means of preventing this irritation, and is preferable to various kinds of sugar used for this purpose, being both in general more effectual and less apt to oppress the stomach.

When the expectoration becomes difficult, and still more when it is wholly suppressed, there is danger of much increase of the symptoms. At an early period nauseating doses, particularly of the antimonium tartarisatum, are often the best means of restoring the expectoration and rendering it easy. At more advanced periods, especially when the temperature and strength of pulse are inconsiderable, the various preparations of squills and the fetid gums are often employed with advantage.

If the interruption of the expectoration depends on the increasing debility, the means which have been pointed out for restoring the strength will be the most likely to recall it.

If it arises, as sometimes happens, from a great degree of toughness in the matter to be expectorated, inhaling the vapour of warm water or gruel in which onions have

been

been boiled is the best remedy. It has been recommended in all cases of difficult or scanty expectoration, to employ vapour impregnated with turpentine, the various balsams, gums, &c. But the irritating quality of vapour, thus impregnated, renders it a doubtful remedy.

Many of the foregoing means often allay the dyspnœa, at the same time that they restore the expectoration, and they may be occasionally used for this purpose when the expectoration is not suppressed, particularly the squills and gums when there is not much heat, and especially when the dyspnœa suddenly increases without any evident cause. When there is much heat and a dry skin antimonial medicines tend to obviate the irritating effect of the gums. These, combined with opiates, are very powerful in such cases, both in relieving the dyspnœa and promoting the expectoration. In confirmed phthisis the skin is seldom long very hot and dry, and antimonial medicines are hardly ever proper, except in very small doses when the strength of the

pulse

pulse is considerable during the evening exacerbations.

Many seem to think, that it is only as expectorants and antispasmodics that the gums ever prove useful in phthisis. We have seen reason to believe, however, that in certain cases, which might perhaps be better ascertained than they have been, these medicines are otherwise beneficial. For whatever purpose they are used, if they increase the heat and oppression, as I have already had occasion to observe, they will do harm. They generally have these effects, and consequently ought to be avoided when there is any considerable hardness in the pulse.

For allaying the cough and dyspnœa, and rendering the expectoration easy, few means are so powerful as blistering, and it is generally proper either to support the discharge from the same blister for some time, by means of an irritating salve, or, what is generally more effectual and often less troublesome, to apply a succession of blisters. Blistering is a remedy of more general application in this complaint than any of

those

those just mentioned. The excitement, even at the commencement of phthisis, being seldom such as to counterindicate their use. In supporting a discharge by blisters we must attend to the degree of strength, and not risk any considerable diminution of it.

Local blood-letting is also powerful in relieving the cough and dyspnœa, though not so much so as blisters. The excitement, except at an early period, is seldom such as to render it necessary. Local blood-letting is more powerful in relieving the pain of the chest, and when it is severe and the excitement such as warrants the use of this remedy, a small loss of blood from the skin, as near to the pained part as possible, is often advisable. But the effect of blistering, even in relieving the pain, is frequently as speedy, and, for the most part, more permanent than that of blood-letting; so that, except where the pulse is hard, especially as it is a safer remedy, it is generally to be preferred. When the pain is very severe, a combination of these remedies is proper.

Nothing is more pernicious in complaints

of

of debility, than continued vomiting. I have more than once had occasion to point out the means of allaying this symptom. The saline draughts where the skin is dry, or a mixture of the vitriolic acid, conserve of roses, and peppermint water, when the tendency to sweat is considerable, will often prevent vomiting .If it resists such means, a dose of solid opium, or opium combined with camphor and castor, will generally be found effectual. But vomiting in phthisis is, for the most part, the consequence of violent coughing, and is therefore removed by the means which alleviate this symptom. In obstinate vomiting it is often proper to excite the action of the intestines by cathartic clysters, but in a disease of such debility they must not frequently be had recourse to; and in the latter stages the danger of diarrhœa wholly precludes the employment of such means.

There is no symptom which more rapidly reduces the strength, and which consequently it is more necessary to check, than the sweating that so generally attends the more advanced stages of phthisis. The various

rious means which tend to restore the strength, tend at the same time to check this symptom. Dr. Percival observes, that a biscuit steeped in wine, a draught of wine, or a dose of the solution of myrrh, often succeeds in checking the sweat. Lime water has been much celebrated for this purpose. The reader will find it recommended by Sir John Pringle, Burserius, and others; but there is no medicine of equal efficacy with the vitriolic acid, which rarely fails to lessen, and often wholly checks the sweating. Some maintain that it ought not to be wholly checked; but this opinion seems to be the result of hypothesis. The relief which the sweating brings is never complete and always transitory, and the harm which it does is certain. Checking the sweat, it has been said, tends to bring on the diarrhœa; and there may be some truth in this observation; but we gain little by preventing the diarrhœa at the expence of the constant recurrence of the sweating. Both are to be checked, as their tendency is equally pernicious.

Van Swieten observes, that opium is almost

almost the only thing which brings effectual relief in the colliquative diarrhœa of phthisis, and when it is accompanied with griping pains and tenesmus, he directed it to be injected with other medicines by clyster. "Rhubarb," Dr. Cullen observes, "so "commonly prescribed in every diarrhœa, "and all other purgatives, are extremely "dangerous in the colliquative diarrhœa of "hectics. Fresh subacid fruits, supposed "to be always laxative, are often in the "diarrhœa of hectics, by their antiseptic "quality, very useful." Dr. White recommends the colomba, and refers to a treatise of Dr. Percival on this medicine, in which are several cases where it checked obstinate vomiting and purging when other means had failed.

As the colliquative diarrhœa is the effect of debility, I have followed those who have trusted chiefly to simple astringents alone or combined with opium, generally employing either the kino or extract of logwood, and have always found them more or less successful, till at length the powers of life gradually declining, all medicines lose their effect. Whatever other means we

employ, some mucilaginous fluid is proper for the purpose of allaying irritation. It may be observed of the diarrhœa, as of the sweating, that all means of strengthening the system in general will be found useful in checking it.

The menstrual discharge, we have seen, always sooner or later ceases in phthisis. This alarms the patient, and when it happens at an early period the whole complaint is generally attributed to it. The physician knows that it is merely a symptom of increasing debility, that it is in vain to use any direct means to restore its regular returns, and that could it be restored, its only effects would probably be, that of increasing the debility and hurrying on the fatal termination.

It is hardly necessary to add, that avoiding all the exciting causes forms an essential part of the treatment of a disease whose causes are so numerous and frequently applied; for it appears, from what was said of the causes of phthisis, that every thing which tends to diminish the strength or irritate the lungs may be ranked among them.

BOOK III.

OF THE PROFLUVIA.

ONLY one order of diseases remains to be considered, the Profluvia, the definition of which was given in the general introduction, namely,

Symptomatic fever, in which the local affection is an increase of some colourless secretion.

Under this order Dr. Cullen arranges only two diseases, Catarrh and Dysentery. If any others have a title to be classed with them they are the Cholera and Diabetes. But these are so frequently unaccompanied by fever, at least through a great part of their course, and often indeed through the whole of it when they terminate favourably, that they have not been regarded as febrile diseases.

Of the two diseases arranged by Dr. Cullen under this order, I have in the preface to this volume given my reasons for considering only the Dysentery here.

CHAP. I.

Of Dysentery.

DYSENTERY is defined by Dr. Cullen,

A contagious fever, with frequent mucous or bloody stools. The natural fæces, for the most part, being retained, with griping and tenesmus.

As the contagious nature of dysentery is not always remarkable, and the symptoms mentioned in the definition serve sufficiently to distinguish it, this part of the definition might with propriety be omitted.

Dr. Cullen agrees with Sir John Pringle in admitting but one species of idiopathic dysentery, regarding the circumstances which have been looked upon as marking different species of the complaint as merely accidental; such as the presence of worms; the discharge by stool of fleshy or sebacious substances, there being no discharge of blood; the appearance of miliary eruption, &c. There would be no end it is evident to species of this kind.

SECT. I.

Of the Symptoms of Dysentery.

THIS disease sometimes comes on with the usual symptoms of fever, shivering, and the other marks of a cold stage, which are soon succeeded by heat and thirst, and in a short time after by the symptoms peculiar to dysentery.

It more frequently happens, however, that an affection of the bowels is the first symptom. In many cases the disease comes on with a common diarrhœa, which gradually assumes the form of dysentery. In other cases there are from the first, severe griping, tenesmus, and bloody and mucous stools. The febrile symptoms soon shew themselves, and there is often a very sudden prostration of strength.

The disease often makes its attack very gradually, wandering pains of the bowels distressing the patient for several days before the dysenteric symptoms shew themselves, and the fever frequently does not make its appearance till some time after this

happens. It is sometimes a synocha throughout the greater part of its course, more frequently a typhus, and in some cases it is a well marked typhus from the first. When this last happens, the danger is very great; we must expect all the symptoms of a putrid fever, aggravated by those of dysentery.

In the worst cases the disease sometimes proves fatal in a few days, during which the patient is reduced to the last stage of debility. If he survives many days, the emaciation is extreme, equal to what we observe in phthisis. In more favourable cases the debility comes on less suddenly.

As the disease often begins with diarrhœa, in a large proportion of cases the favourable change is denoted by the return of this symptom, the griping and tenesmus abating or wholly disappearing. The diarrhœa generally soon leaves the patient with no other complaint than a degree of languor and debility proportioned to the severity of the preceding disease.

In other cases, the hardened fæces, which are either wholly retained during the complaint,

plaint, or partially excreted in small hard masses, are at length discharged. The dysenteric symptoms abate, and the patient gradually recovers.

The duration of dysentery is various; the mildest, like the more severe forms, sometimes run their course in a few days, or at most weeks. Those in which the symptoms are obstinate without being severe, are often protracted for many months.

Such is the general course of this disease. In speaking of its symptoms in detail, after mentioning the ways in which it makes its attack, I shall give the progress of the local symptoms denoting the peculiar affection of the bowels; then, that of the general symptoms which accompany these; and lastly, mention the different ways in which the complaint terminates, either in death or recovery. Before proceeding farther I may observe, by the bye, that as the fever in dysentery is not only sometimes the first part of the disease which shews itself, but even now and then continues for some time before the local symptoms appear, and as the degree of fever often seems propor-

tioned rather to some peculiar virulence of the contagion, than to the degree of the local affection, it may seem, that the fever in dysentery is regarded as symptomatic of the local affection with less propriety than other symptomatic fevers. But it appears from a variety of facts, that the contagion of dysentery, or the putrid effluvia attending it, may excite a real typhus independently of any local affection, in which the latter frequently does not appear for some time after the commencement of the fever, and in some cases does not appear at all. Where such a fever, therefore, continues for some time before the local affection shews itself, the case is evidently to be regarded as a complication of typhus and dysentery. In the case of simple dysentery we shall find sufficient proof of the general affection depending on the local, the former being constantly influenced both with respect to kind and degree by the state of the latter, ceasing along with it even when removed merely by local means, and again returning if it be renewed by errors of diet, or any other cause affecting the intestines.

When

When dysentery makes its attack suddenly, it often comes on with great prostration of strength, attended with nausea and vomiting, and a weak and frequent pulse. The prognosis is then generally bad.

More frequently dysentery comes on with milder symptoms. The patient is seized with rigors and the other symptoms which attend the commencement of fever, and in a short time the affection of the bowels shews itself with pain, and mucous and bloody stools. The pain is generally of the griping kind, but is very various in different cases, and indeed at different times in the same case.*

It

* "Some, Dr. Cleghorn observes, "are seized "with a twisting of the guts, which, as they express "it, draws up their bowels into knots, and many, "instead of griping pains which shift from place to "place and come at intervals, have acute fixed ones in "some particular part of the belly, which occasion "complaints as various as their seat, some being "attended with stiches about the bastard ribs, interrupting their breathing freely, as in the pleurisy; "others with a pain reaching from one hypochondrium to the other, cutting them, as it were, in "two, while others complain only of a pain about the

It is sometimes preceded, even for days, by various symptoms denoting derangement in the stomach and bowels, flatulence, acid eructations, costiveness, &c.

Sometimes, I have just had occasion to observe, dysentery is preceded by common diarrhœa. By irritating the intestines and washing off the mucus from them, this symptom seems frequently to occasion the dysentery. The desire to go to stool gradually becomes more frequent; the griping and tenesmus more severe; the matter voided is gradually changed, and at length consists wholly of a small quantity of mucus mixed with blood.

The quantity of blood in the stools is very various. Sometimes it is only in strakes; sometimes it forms a considerable part of the stool, and sometimes almost the whole. So that, were it not for the other symptoms, the complaint might be mistaken for the hæmorrhois. It is from the large

"the pelvis, with a constant fruitless straining to "stool, though the body is for the most part costive, "and discharges nothing but bloody slime."

quantity

quantity of blood sometimes discharged, that the complaint has been called the bloody flux, not very properly, however, since this symptom attends other diseases, and in many cases of dysentery the stools are unmixed with blood. The disease has then been termed dysenteria alba, or morbus mucosus, and esteemed a different species from the common dysentery, but very inaccurately, since in different cases the quantity of blood passed varies from a very considerable, to the least possible quantity.

The natural fæces are often retained during almost the whole course of the complaint, and when they do appear they are in the form of scybalæ, that is, small separate balls which seem to have lain long in the cells of the colon. The excretion of these, whether spontaneous or by medicine, is attended with a remission of the symptoms, particularly of the frequency of the stools, griping, and tenesmus.

Such are the appearances of the stools in all cases of dysentery. Sydenham, indeed, mentions cases under the name of dysentery,

tery, in which there were no stools. They cannot, however, be regarded as dysentery, since the stools may be looked upon as the chief characteristic of this disease.

In many instances there are particular appearances in the stools not essential to the disease. Among the most frequent of these are small masses of a fatty looking substance, concerning the nature of which there is some difference of opinion.*

Membranaceous

* "As to the white substances," Sir John Pringle observes, "which I compare to suet, I do not know "whether they are the same which Hippocrates calls "σαρκες (carunculæ) but they are plainly described by "Aretæus and Cælius Aurelianus, and have since been "taken notice of by later writers, under the name of "corpora pinguia, and variously accounted for. "Although I have frequently seen them I had ne-"glected to examine them till the autumn of 1762, "when Dr. Huck and I visited a patient ill of dysentery, "who voided such substances. We preserved one of "them, and were both satisfied that the object of our "inquiry was nothing but a bit of cheese, though the "patient assured us afterwards he had tasted none "from the beginning of his illness, which had been "of above a fortnight's standing." Sir John Pringle concludes, that they originated either in bits of cheese which had passed from the stomach before the illness,

or

Membranaceous substances are a common appearance in dysenteric stools, and have been regarded as small portions of the internal coat of the intestines abraded; but Zimmerman observes, that the fibres and membranes that come away in dysentery, and are considered as the inner coat of the intestines, are very seldom any part of it, but often nothing else than inspissated mucus, which is sometimes excreted; also under the appearance of a fleshy, membranous, or fatty body, in cases where no ulcer of the bowels was to be perceived on dissection. He admits, however, that the villous coat of the intestines is sometimes abraded and passed by stool. The bowels, he observes, are sometimes ulcerated, but so late in the disease that the membranous matter is changed

or were formed from milk, the use of which the patient had continued. We shall presently find Zimmerman giving a different account of these substances. It is more than probable that they are not the σαρκες of Hippocrates, since Degner and other writers mention both these fatty substances and small fleshy bodies which they term carunculæ. Other similar appearances are met with in the stools. All of these substances have sometimes been rejected by vomiting.

into

into a putrid thin pus, or is so mixed with blood and mucus that it is impossible to distinguish it; so that there cannot be a greater mistake, he adds, than to suppose the fibrous and membranous substances passed often in the first days of the disease to be parts of the internal coat of the intestines and signs of ulceration.

It is not uncommon in dysentery for worms to be passed by stool or even by vomiting.*

The consistence of the stools is various. The mucus is generally mixed with a watery fluid, and is often frothy; as the disease advances, the stools sometimes become sanious and of a dark brown or black colour, with an insupportable cadaverous fetor. This change in the appearance of the stools affords a very bad prognosis, and often, indeed, indicates the presence of gangrene. At an early period the stools have often little or no fetor, but a faintish disagreeable smell.

* In 1743 we are informed by Huxham that a dreadful dysentery raged, in which worms were passed even by adults and old people. Pringle, Monro, and others, mention worms thrown out by vomiting.

By

By an attention to the local symptoms of dysentery we may sometimes determine what part of the intestines is affected. If the small intestines be the seat of the disease, the pain is often very acute, and the patient complains of its twisting round the umbilicus. The sickness and vomiting, and the pain and flatulence of the stomach, are more urgent than when the disease is confined to the large intestines, the fæces are not passed immediately after the griping; and the blood is mixed intimately with the other parts of the stool.

Hiccup sometimes supervenes early without affording a bad prognosis, which it always does when it comes on at a late period and when the other symptoms wear an unfavourable aspect. When hiccup appears early and proves obstinate, it may be suspected, that in whatever part of the intestines the complaint is seated, it is pretty high in the abdomen.

When it has its seat in the large intestines, the pain, according to Burserius, is more obtuse. But Sir John Pringle remarks, that in general the irritation of the stomach and higher

higher intestines is attended with more sickness than griping, and that when the gripes are very acute without sickness, it is probable that the disease is in the large intestines. When the seat of the complaint is in these, the tenesmus is most urgent, the stools more quickly follow the griping, and the blood and purulent matter, if there be any, is less mixed with the rest of the excrement.

Sometimes both the large and small intestines partake of the disease. This circumstance, together with the intestines constantly changing their place, the sympathy which subsists between different parts of them, and their being in some measure differently situated in different people, often renders it very difficult to determine with any certainty the seat of the disease.

The matter rejected by vomiting in dysentery is frequently bilious, and sometimes, though rarely, stercoracious.*

The flatulence of the stomach and bowels sometimes goes so far as to produce a real tympanites intestinalis.

The tongue and fauces partake of the

* See the observations of Degner and some others.

general

general disorder of the alimentary canal. The mouth is foul, the patient complaining of a bitter taste; the tongue white and covered with tough mucus, or rough and dry, at length becoming black. Aphthæ frequently appear about the root of the tongue, and sometimes spread over the whole internal fauces. When we were considering eruptive fevers, I had occasion, in more than one instance, to observe how much the eruption was influenced by the state of the stomach and bowels. It even appeared that disorders of the alimentary canal are not unfrequently its exciting cause. We have reason to believe, that it is on this account that dysentery is so frequently accompanied by eruptions of various kinds. The miliary eruption is frequent in this disease. There is sometimes an eruption of large red pustules running to suppuration.*

There are cases of dysentery unattended

* Degner describes a singular eruption which appeared in one of his patients, blotches and hard black tubercles, like the true pestilential carbuncles, which terminated in a fatal sphacelus.

 by

by fever. In these, however, the affection of the bowels is slight and of short duration. In many cases, we have seen, the fever is a synocha. This is particularly the case in the young and robust, and in those cases in which the disease is produced by the use of fermented liquors, strong food, or other causes which accelerate the circulation.

When the excitement runs high, the danger is considerable, the debility which succeeds being generally proportioned to it. In the worst cases there is but little excitement, and even syncope occurs at an early period. It sometimes happens, that the pulse is natural for the first days, and the disease notwithstanding proves dangerous, especially where the strength is much reduced. About the third or fourth day the pulse becomes frequent and often very suddenly begins to intermit.

The state of the various functions is the same as in simple fever, except where they are influenced by the local affection. There is often a painful strangury from the commencement of the disease, and the urine is

sometimes

sometimes wholly suppressed for several days.

The fever in dysentery is not always continued; it sometimes assumes the tertian type, and in many cases remits irregularly. Considerable remissions, and still more intermissions of either the local or general symptoms, are favourable. They can only be depended on, however, when they have lasted for some time. As the fatal termination approaches, symptoms of extreme debility gradually shew themselves. A lienteric purging often comes on, whatever is taken being passed with little change; the pulse becomes extremely frequent, small, and irregular; the skin bedewed with cold, clammy, and partial sweats; the extremities become cold, and the pulse at length ceases. It sometimes happens, that after these symptoms the patient lives for several days, the pulse and natural heat gradually returning; but these, for the most part, are deceitful appearances. The pain and even tenesmus remit, but the anxiety and restlessness increase, with dark coloured and extremely offensive stools, the face becoming hippocratic.

cratic. We are then assured that gangrene has taken place, and will speedily prove fatal. It is not uncommon here, as in gangrene of the intestines from other causes, for the patient to retain his senses to the last.

We may look for a favourable termination, when the febrile symptoms are mild, some degree of appetite remains, and the patient is little troubled with nausea; when the pains are not very severe, nor the stools very fetid, and the emaciation, weakness, and anxiety inconsiderable; and above all, when the patient enjoys sleep, and the skin is soft and moist. The favourable diarrhœa, in which dysentery often terminates, like that which precedes death, is sometimes lienteric, though seldom in the same degree.

Dysentery rarely terminates in recovery in so short a time as it sometimes proves fatal; seldom in less than twelve or fourteen days. Protracted cases may prove fatal either by the symptoms suddenly increasing, or in consequence of the strength being gradually exhausted. But in such cases the symptoms are generally milder

than

than in those which run their course more rapidly, and the danger consequently is less. The bowels seem sometimes to acquire a habit (if the expression may be used) of retaining the fæces, and the disease is protracted even for years, the patient being constantly harrassed with pain, mucous stools, fever, and want of appetite, under which he gradually sinks. In such cases some part of the intestines is often ulcerated.

The lower parts of the intestines are generally the last that recover their tone; the tenesmus often remaining a considerable time after all the other symptoms have disappeared. This has been ascribed to the remains of the morbific matter; but Sir John Pringle seems to ascribe it to the true cause, the soreness of a part which has been so much inflamed and excoriated in the course of the disease, and which is still frequently irritated. "That the tenesmus "which succeeds dysentery," he adds, "may "be sometimes owing to an ulcer, is asserted "by Morgagni, but he gives only one in-"stance of it in his practice."

Various diseases of debility, particularly of the stomach and intestines, have followed dysentery, especially when long protracted, obstinate diarrhœa, or lientery, dyspepsia, and pains of the bowels. Degner says, that some of his patients after recovering from the dysentery had a discharge of chyle with the fæces; and others almost an insatiable hunger. Permanent stricture of the intestines, particularly of the rectum, as I have myself known, may be induced by long irritation from acrid stools. If the patient is much reduced by dysentery, dropsical symptoms often succeed, which are sometimes removed by tonic medicines and a proper attention to diet and exercise.

SECT. II.

Of the Appearances on Dissection.

ON opening the abdomen of those who die of dysentery, we generally find the intestines inflamed, more or less sphacelated, and sometimes ulcerated. Sometimes they are

are of a dark colour, almost black indeed, for a great part of their course without ulceration.

It is not uncommon to find traces of inflammation throughout almost the whole track of the intestines, and even spreading into the stomach, which in many cases partakes of the gangrene.

The coats of the intestines are often much thickened, and here and there tender, as if half putrid.

The villous coat is frequently abraded, though not so often as once supposed; sometimes it seems quite dissolved into a greenish putrid mass. When the villous coat is consumed, the vascular generally appears full of turgid vessels, as if well injected with red wax.

The internal surface of the intestines is often covered with bloody slime of an extremely offensive smell, and sometimes there is no excrementitious matter, either in the form of scybalæ or any other in any part of them; the digestive powers seeming to have been wholly interrupted for some time before death.

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The large intestines are more frequently affected with gangrene and ulceration than the small. Wherever much blood is passed by stool, we should expect to find the intestines ulcerated; it does not appear, however, that this is always the case. Blood is frequently passed in considerable quantity when no appearance of ulceration can be found after death; so that Sir John Pringle and Zimmerman conclude, that in general the blood flows from the debilitated mouths of the vessels which open on the internal coat of the intestines; and the gangrenous state of this coat often extending so far along the canal without actual ulceration, favours the opinion.

The great quantity of flatus frequently collected in the intestines in this disease, distends them beyond their usual size. From this cause, together with the flaccidity occasioned by the gangrenous state of the intestine, the colon in particular has often been found prodigiously enlarged, the appearance of its cells, and even of the ligaments which form them, being almost wholly obliterated. The ligaments are sometimes

sometimes found corrupted and adhering loosely to the outer coat of the intestine.

When gangrene has not destroyed the texture of the parts, constrictions are found, particularly in the large intestines, often of considerable extent. These are supposed by the generality of writers to be the cause of dysentery, by retaining the natural fæces, which, by lying in the intestine, are formed into hard masses, occasioning much irritation, and are thus probably at least one cause of the copious secretion of mucus in this disease. It is not to be overlooked, however, that the irritated state of the bowels may often occasion constrictions in the course of the disease, which will not fail to aggravate its symptoms. The relaxation of these constrictions readily accounts for the highly offensive and putrid stools which are so often the forerunner of death.

Sir John Pringle, Dr. Cleghorn, and some others, mention an appearance in the intestines of dysenteric patients, which seems to have been generally overlooked, since it would seem from their observations that it

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is not rarely that of flat tubercles, which look like the confluent small pox.* Such are more

* "The dissector," the former observes, "having "cleared away the blood and mucus from the inside "of the cæcum, and of the colon and upper part of the "rectum, made us take notice of certain protuberances "of a lighter colour than the rest of the surface. "They were of a roundish figure, nearly equal in their "height, which was about the twelfth part of an inch, "but of unequal breadth. We all agreed that we had "never seen any thing so nearly resembling the small "pox of a flat sort at the heighth of the disease. "These excrescences stood as thick on this part of the "intestines as variolous pustules, when numerous, do "upon the skin, but differed from them in this, that "as far as we examined them they were of a firm "consistence without any cavity. Mr. Hewson told "us that he believed they took their rise from the "cellular membrane, which lies immediately above "the villous coat; for that some days before, having "opened another person who had likewise died of the "dysentery, he had found the appearances much the "same as in this subject, and particularly with regard "to these tubercles, which he had examined at leisure. "These protuberances," he observes a little lower, "were only in the larger intestines; for though we "likewise opened the smaller, we could observe "nothing similar to them there." Sir John Pringle thinks that it is probable that they might have been seen in the other subjects he examined had they been

are the appearance observed in the intestines of those who die of dysentery. Dr. Cleghorn

more narrowly inspected. "Linnæus," he observes, "in treating of the bloody flux says, that in the "epidemic dysentery there is an internal scabies of "the intestines, as appears from the dissections of the "bodies which die of this complaint. And Mr. "Cleghorn," he remarks in another place, "who "had frequent opportunities, at Minorca, of seeing "the epidemic dysentery, observes, that on opening "the bodies he constantly found the great guts either "entirely mortified, or partly inflamed and partly "mortified; that the rectum was mostly affected, and "that in many he had seen schirrous tubercles strait-"ening the cavity of the colon in several places. "Now though these tubercles, which I describe in "my patients, were too flat to be taken notice of as "straitening the cavity, yet in Mr. Hewson's prepa-"ration they were perhaps protuberant enough to "have had that effect. On the other hand it may "be remarked, that such protuberances are scarcely "mentioned in the Sepulchrotum of Bonetus, or in "Morgagni's valuable Supplement; but the silence "about them in these two works is perhaps no proof "against their frequently existing, when we consider "that in Bonetus we have but a few cases, and those "but imperfectly delivered, of those who died of an "epidemic flux, and in Morgagni, of that sort none "at all, his cases being all of the sporadic kind, as he "generally declined opening the bodies of those who "died

horn informs us that n some cases which he saw, the ulcers were not on their internal but external surface. In a few, he observes, there were small abscesses in the cellular membrane of the peritoneum, contiguous to the colon and rectum; the convolusions of the intestines frequently adhering to each other, or to parts in their neighbourhood.

With regard to the other viscera of the abdomen, they are often sound. The mesentery and mesocolon, even when the intestines

"died of any infectious distemper." Similar appearances have been noticed by some later writers. Zimmerman's account of them is in some measure different from the foregoing. In the intestina crassa, he observes, there were little aphthæ that bled when pressed and looked like the flat kind of small pox when this disorder is at the height, but with this difference, that they were without any cavity. They consisted of the two innermost coats of the intestines, that grew one within the other, and were thickened by the inflammation. The first of these were covered by a black mucus, and black spots were likewise visible on it. Sometimes the mesenteric glands were swelled, relaxed, filled with a bad kind of pus, and very nearly mortified. Zimmerman also observes, that small pustules have sometimes been seen in the bowels, which come away even during the patient's life, and are full of a putrid and very offensive matter.

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are gangrenous, are sometimes loaded with fat. Dr. Cleghorn observes, that in two cases which he saw, the omentum was almost entirely wasted, the small remains of it being quite black, while purulent matter was found in the abdomen. The gall bladder is often much distended with bile, which is generally of a darker colour than usual. The liver, spleen, pancreas, and kidneys are sometimes flaccid and enlarged, sometimes, though more rarely, they are diminished in size and indurated. In some cases they have been found gangrenous or consumed with abscesses.

The following description forms a striking picture of the effects of this disease. "Although the body was opened the next "day, the smell was intolerable, the intes-"tines were wholly mortified, and the "stomach partly so. The coat of the liver "was putrid, and in its substance were "several abscesses containing a purulent or "ichorous matter; the spleen was likewise "corrupted."*

* Sir John Pringle's Observations on the Diseases of the Army.

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There is seldom much change to be observed in the thoracic viscera. The author just quoted mentions a case in which the diaphragm ascended as high as the third rib, probably from the distension of the abdomen, yet the lungs were sound. In the 31st Epistle of Morgagni, indeed, a case of dysentery is related, in which the lungs were found in a very diseased state. The blood is generally of a dark colour, and partly coagulated in the ventricles of the heart.

From the above state of the abdominal viscera,* we have reason to believe, that death is generally occasioned by inflammation and gangrene of the intestines. When the pulse is frequent and small and the pain severe, with much tenderness of the abdomen and nausea, we may be assured that inflammation of the intestines has supervened.

* See Roederer de Morbo Mucoso, p. 155 et seq.

SECT. III.

Of the Causes of Dysentery.

THE ancients were acquainted with dysentery, but most of them used the word in a very vague sense; Hippocrates, Galen, and many others, applying it as a general term for all kinds of fluxes or hemorrhagies of the intestines; others confining it to express an ulcer of some part of the alimentary canal. Sydenham and Willis seem to be the first who confined the term to the disease we are considering.

Dysentery is more a disease of the warm than the cold and temperate climates, and most frequently appears towards the end of summer and in autumn. Huxham is among the few writers who met with an epidemic dysentery in spring. It has been observed most apt to make its appearance when the summer is unusually warm and the autumn moist; and the coming on of the winter cold is generally a chief means of checking its progress. These observations, however, are not universally applicable, for dysentery has

has sometimes made its appearance, and proved very fatal after moderate heats, and sometimes it has continued through a great part of the winter.

Weak and exhausted habits are most liable to this disease. This observation is most applicable to the worst forms of dysentery, which partake so much of the putrid fever, that Dr. Blane looks upon the disease as merely a fever of this kind, regarding the affection of the bowels as only symptomatic.

With regard to the occasional causes of dysentery, many maintain that there is but one, contagion ; and that the other supposed occasional causes of this disease only favour its operation.* I shall make a few observations on the contagion of dysentery, and

* If this be just, many of the circumstances I am about to mention should be regarded merely as predisposing causes; as however it is probable (as will appear from what I am about to say) that they act also as occasional causes, I refer them to the latter head. It is to be recollected, as I have already had occasion to point out, that even in the most contagious diseases the contagion itself sometimes acts merely as a predisposing cause.

afterwards

afterwards on the other circumstances which have been supposed capable of exciting this disease.

Of contagion in general I have already had occasion to speak at length; it will only be necessary to make a few additional observations, particularly applicable to the disease before us. The dysentery is now very generally admitted, in many cases at least, to be contagious; so that it is unnecessary to quote observations in support of this opinion. The contagion of this disease, like that of most others, extends but a short way around the sick. But its chief source is the excrement; for the mere smell of it, as Zimmerman observes, has often communicated the disease to men in health, and even to beasts. And it would seem, that the more fetid the excrement, the more contagious is the disease. It may be propagated, the author just mentioned thinks, by clothes or furniture which have never been in contact with the sick, provided they have been exposed to the effluvia arising from the patient's body, and still more to those arising from the excrement;

 and,

and, as I have had occasion to observe of other diseases, the person who wears the infected clothes may escape, while the disease is communicated to those with whom he has intercourse. It is a remark of Sir John Pringle, however, that the contagion of dysentery spreads more slowly, and is of a less infectious nature, than most others; so that in the milder epidemics, as in that described by Sydenham and Willis, its contagious nature has passed unnoticed. This observation by no means applies to the worst forms of it. Degner and others mention epidemics not less infectious than the plague itself. Like many other contagious diseases, it is often communicated to the fœtus in utero.

The manner in which dysentery is propagated points out some of the chief means of checking its progress. Public privies are the most certain means of spreading this distemper. It is not even proper to confine the sick to the same privies, as the constant application of the contagion not only renders the disease more dangerous to the patient himself, but to all that are near him,

him, by rendering it more infectious. The excrement of the sick should be regularly buried. By this means, and carefully preventing all intercourse between the healthy and diseased, the spreading of the disorder might in a great measure be prevented, even in camps where it often proves so fatal. The attention should be particularly directed to detecting the diseased, who use every means to conceal a disorder which will exclude them from the comforts of society, and seldom betake themselves to bed till they have infected many of their companions. But for the various means of preventing the spreading of this, as well as other contagious diseases, I refer the reader to the first volume.*

In

* A vomit and gentle cathartic, Zimmerman remarks, seem often to prevent the disease in those who are exposed to its contagion. Those, it has been observed, who eat little, drink less, and do not take their drink cold; who keep up the perspiration, especially during the night by covering themselves all over with the bed clothes; either escape the disease, or have it slightly. Fatigue, vexation, and fear dispose to dysentery as well as other contagious diseases,

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In endeavouring to prevent the spreading of the contagion, it is particularly necessary as much as possible to avoid the other causes of dysentery. If they are not capable of exciting the disease, independently of contagion, they certainly add to its power. The chief of these causes are, bad diet; the presence of much bile, or other irritating matter, in the stomach and intestines; cold; and, above all, putrid effluvia.

The habit of body induced by a bad diet never fails to aggravate the symptoms of this disease, and seems to be one of the chief causes of the greater virulence of dysentery among the lower ranks. The same observation applies to a debilitated habit, however induced. I have had opportunities of pointing out how much the severity of other contagious diseases is increased by it.

Many have been led wholly to ascribe dysentery to a superabundance of the bile, from the stools in this complaint being so frequently bilious; from an unusual quan-

There is every reason to believe, that tonic medicines. by strengthening the alimentary canal, tend to prevent dysentery. See Sir G. Baker de Dysenteria.

tity

tity of bile being often found in the intestines and gall bladder of those who die of it, and that generally of a dark colour, implying a vitiated state of this fluid; and from dysentery prevailing most in those countries where a vitiated secretion of bile is most common. A very slight admixture of bile, however, will often give a green or yellow colour to the stools. Bile, it is true, is often found in considerable quantity in those who die of dysentery, and frequently appears to be vitiated, but in different cases its appearance is extremely different. Sometimes it is in large, sometimes in small quantity, sometimes of one colour, sometimes of another; in some cases it is thick, in some thin, and in others of a natural consistence; so that no particular state of the bile seems connected with dysentery; and in the cholera and other diseases we see the bile variously changed in quantity as well as quality without inducing this disease. By some it has been maintained, that dysentery is owing not to the presence of bile but some other acrid matter in the intestines, either produced in these cavities or in other parts of the body, and

poured into them. But there seems in many cases no evidence of any acrid matter in the intestines till the disease itself has produced it.

Notwithstanding these observations, it seems not improbable that irritation of the intestines, kept up by bile, worms,* or other noxious matter, for a great length of time, may terminate in dysentery; and that such causes are favourable to the operation of its contagion, and tend to increase its virulence, every day's experience evinces.

With regard to cold as a cause of dysentery, almost every writer on the diseases of the army informs us, that lying in the fields and doing duty in all kinds of weather are peculiarly favourable to its appearance. Here, as in other instances, cold is most pernicious when it alternates with heat, which is probably one of the causes of the unwholesomeness of warm moist weather, when the heat during the day raises much vapour, which, being condensed, occasions damp and chilliness in the evening. Hence it seems to be, that dysentery often rages at

* See Dr. Huxham's Account of the Epidemics of 1743.

the

the same time with remitting and intermitting fevers, and that these diseases are frequently combined in the same patient.* Fevers of all kinds, indeed, especially if they shew a tendency to become malignant, seem often accompanied with a predisposition to dysentery, if they are not capable of exciting it, and not unfrequently terminate in it. Dysentery, many think, never assumes the remitting form, except when complicated with remitting fever.

Concerning putrid effluvia, whatever share they may have in the first production of the disease, they never fail to increase the violence of its symptoms, and render it more infectious. Dr. Donald Monro, who had very frequent opportunities of seeing this disease, wholly attributes its production to obstructed perspiration and exposure to putrid effluvia. It first shews itself among the lower ranks, who keep their persons and houses dirty. Zimmerman even goes so far as to attribute to this cause alone the contagious nature of dysentery. For on its

* See the observations of Sir John Pringle, Dr. Donald Monro, &c.

first appearance, he remarks, as it attacked many at the same time, it seemed to proceed from a cause which acted more generally than contagion could be supposed to do, and seemed only to become infectious in proportion as cleanliness was disregarded.

It is very doubtful whether (as Zimmerman seems to suppose, and as the great effect of the excrement in propagating the disease has induced many to believe) dysentery, like common typhus, may arise from putrid effluvia alone. The constant affection of the bowels must incline us to believe that there is something specific in the contagion of dysentery. I had occasion to observe, in treating of contagion in the first volume, that a concurrence of certain causes may produce diseases which cannot be produced by any of these causes singly, and that if the disease thus occasioned be contagious, as the peculiar concurrence of causes which first produced it, where many are required, will seldom happen, it will seem in every instance to be propagated by contagion alone. Thus we find, that a very simple concurrence of circumstances is suffi-

cient

cient to occasion typhus, which afterwards spreads by its own contagion. It seems from many observations not improbable, that many causes, the application of cold, a diet of difficult digestion, &c. which would in ordinary circumstances occasion diarrhœa, may, when the patient is constantly exposed to putrid effluvia, produce dysentery.

When the plague, typhus, and other contagious fevers, it was observed in a former volume, are prevalent, few other diseases appear, and those which do, partake of the nature of the prevalent epidemic. The same observations have been made respecting dysentery. While the dysentery raged, Degner observes, there was hardly any other disease to be met with except diarrhœa and one or two cases of small-pox. I knew very few, he adds, that during this time were confined to bed by any other disease but the dysentery. Most writers on this disease observe, that the diseases which appear while dysentery rages partake of its nature. Intermitting and remitting fevers, in particular, are apt to be accompanied with dysenteric affections of the bowels. It was an obser-

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vation of Sydenham, that the epidemics of the same year bear some resemblance to each other, and we find that the worst kinds of dysentery, in which the fever is typhus and the stools very fetid, are often preceded or followed by what has been called a putrid fever.

SECT. IV.

Of the Treatment of Dysentery.

THE treatment of dysentery, Dr. Cullen observes, for want of a proper view of the nature of the disease, seems to have been in several respects fluctuating and undetermined. He therefore explains what he conceives its nature to be, and thus endeavours to establish with more accuracy the proper treatment. Dr. Cullen's idea of the proximate cause of dysentery, namely, its depending wholly on a preternatural constriction of the intestines, is very far from being established; at the same time, it may be regarded as the most probable opinion which has been offered, and as it serves to

fix

fix in the mind certain parts of the treatment, it may be useful to keep it in view.

It does not however lead, a priori, to the whole of the treatment which has been found most successful, and might even suggest an early and free use of opiates and other modes of practice which are hurtful. We cannot, therefore, agree with Dr. Cullen, in regarding the removal of the supposed constriction of the intestines as the indication on which the whole treatment rests. Sir John Pringle seems to have regarded our knowledge of this disease as too confined to admit of our laying down indications of cure. But although we are not warranted, perhaps, in laying down such as imply a knowledge of the proximate cause, it does not seem difficult, if we attend to the effects of the means found beneficial, to form indications of cure which will serve for conducting the treatment. From a review of these means it would appear, that there are two indications in dysentery; to procure the evacuation of the natural fæces, and as soon as this indication is answered, to restore the tone of the bowels.

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The first of these indications is answered, first, by removing irritation and other causes which render the motion of the bowels ineffectual in expelling the fæces; secondly, by increasing the motions of the stomach and bowels by cathartics. The circumstances which, besides irritation, tend to prevent the relaxation of the bowels, seem reducible to the two heads of increased excitement and debility.

In considering the means of fulfilling the first indication, I shall necessarily be led to make some observations on the use of cathartics. Such as are not immediately connected with them I shall refer to the head of cathartics.

It is of the first importance in this disease, that every thing which tends to irritate the stomach and intestines should be avoided; the diet, therefore, we shall find, ought, with the exceptions afterwards to be pointed out, to be of the very mildest kind. But it is not sufficient that the ingesta be mild; we must, as far as we can, expel the morbid contents of the primæ viæ, and allay or prevent the irritation occasioned by those which

which we cannot remove; for whether dysentery be occasioned or not by irritating matter in the primæ viæ, it is always attended with more or less of it; the most pernicious source of irritation in this disease.

The morbid contents of these cavities are to be expelled by emetics and cathartics. With regard to the latter, they are of such importance in this disease, that I shall have occasion to notice them in every part of the treatment, and shall therefore only observe here, that one of the most essential ways by which they are beneficial in dysentery, is, by removing the noxious contents of the intestines.

The use of emetics is chiefly confined to the early periods of the disease. They are particularly indicated where the stomach is loaded, especially if at the same time the excitement is considerable, with a dry, parched skin. At the commencement, indeed, the excitement is seldom so low as to counterindicate their use, which is not merely that of emptying the stomach and preventing the introduction of irritating matter into the intestines, for they determine

to

to the skin, thus tending both to allay the fever and relax the bowels. When the stomach is much loaded, emetics are often employed with advantage as late as the tenth, twelfth, or fourteenth day. As might be inferred, a priori, from the purposes which they seem to serve in this disease, their frequent repetition is seldom proper, and often does harm by the debility it induces.* The emetics generally employed in dysentery are, the antimonium tartarisatum and ipececuanha. They should be given in small and repeated doses, that they may partly pass the pylorus before exciting vomiting, unless the symptoms of oppressed stomach are urgent. The preparation of antimony, termed the vitrum antimonii ceratum, has been celebrated as an emetic in dysentery, but is now, on account of the roughness and uncertainty of its operation, very generally laid aside.

* For the use of emetics in dysentery the reader may consult the works of the different authors I have had occasion to mention, particularly those of Sir J. Pringle, Dr. Cleghorn, Dr. D. Monro, Dr. Cullen, and Dr. Zimmerman, of whose work a translation from the German is given by Dr. Hopson.

The

The only means we have for defending the intestines against the acrimony of their contents, are, mucilaginous and oily demulsions. The latter seem to be the most effectual, but they are most apt to oppress the stomach, their employment consequently should be chiefly confined to clysters. A solution of gum arabic or tragacanth in water sweetened with sugar, or water gruel, or milk in which flour has been boiled, when it does not oppress the stomach, may be drank.

In preparing oily clysters, the oil should be rubbed with a sufficient quantity of mucilage to make it mix readily with the milk, of which the remaining part of the clyster should be composed. These means relieve the pain and tenesmus, and seem to act partly by lining the internal coat of the intestines and thus defending them against the acrimony of their contents, and partly as a warm bath, by their bulk, warmth, and blandness softening and relaxing the bowels.

When, notwithstanding these means, the irritation and griping are still severe, we

must

must call in the aid of external means, particularly the warm bath, fomentations, and blisters. The first is strongly recommended by Sir George Baker; the semicupium is sometimes used with advantage; fomentations of the abdomen are more frequently serviceable. The addition of strong peppers and spirits to the fomentations, by acting as rubefacients, considerably increase their efficacy. We are not, however, to expect so much from any of these remedies as from a large blister applied over the abdomen. In mild cases so severe a remedy is not necessary.

Certain medicines have been recommended with a view more directly to allay spasmodic contractions of the bowels. Of these, opiates are unquestionably the most powerful. Concerning their exhibition in this disease, however, there has been some difference of opinion. There is scarcely any writer on dysentery that does not warn us against the early use of opiates.* But if judiciously

* I have always looked upon it, says Zimmerman, as dangerous to give opium in dysentery, before the fuel

judiciously employed they are valuable medicines in this disease. They are the most powerful we possess for allaying the pain and tenesmus, which are often intolerable.

It is only, however, after a pretty free evacuation has been procured by cathartics, that opiates are admissible; they may then be given with advantage in the evening, for the purpose of procuring sleep, and the more so as the pain is generally most severe in the night time. It has been observed,

fuel which feeds the disease is burnt out. "Si astrin-"gentia et opiata præpropere dantur (Huxham observes) "mox gravissime accedunt tormina, stomachi ægri-"tudo, singultus, aphthæ, tandemque intestinorum "sphacelus, quem cito mors excipit." Lieutaud, Dr. Blane, Sir John Pringle, and many others might be quoted to the same purpose. Even Dr. Cullen, whose opinion of the disease seems to point out opium as the principal remedy, observes, that by occasioning an interruption of the action of the small intestines, it favours the constriction of the colon, and thereby sometimes aggravates the disease, and that if the use of it supersede the employment of purgatives, it commonly does much mischief. I believe indeed, he adds, that it is only the neglect of purging that renders the use of opiates necessary.

indeed, that if opium allays the local symptoms, it occasions a proportional increase of the febrile. But the latter effect is seldom considerable, unless it be exhibited before a proper relaxation of the bowels, or while the excitement is great.

At whatever period of the disease opiates are given, their tendency to occasion costiveness must be carefully obviated. Some have proposed combining a cathartic with the opiate, expecting that while the cathartic obviated the constipating effects of the opium, it would counteract the irritating quality of the cathartic. This plan, however, has not been found so successful as we might, a priori, expect. It has been found better to give the cathartic alone, and the opiate after its operation is finished. With nauseating doses of emetics, indeed, opiates are sometimes combined with advantage; this combination, however, is prescribed less with a view to move the bowels than to promote perspiration.*

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* Dr. D. Monro gave Dover's powder in large doses, from one to two scruples. It proved, he observes, a

The hyosciamus has not, as far as I know, been recommended in dysentery, although its anodyne and gently laxative qualities seem eminently to adapt it to this disease. I have employed it with advantage in cholic, in which it is recommended by Dr. Cullen.

Clysters are often used with much advantage as a vehicle for anodynes in dysentery. The intolerable irritation about the rectum naturally suggests them. When the motions were so frequent that mere emollient clysters could not be retained, Sir John Pringle used generally to add from 20 to 60

a good sudorific and anodyne in some cases, though in others it made the patient sick without producing any good effect. It commonly answered better when used occasionally as a sudorific, than when its use was continued. Although a combination of opium and ipecacuanha cannot be depended upon as a cathartic, yet it sometimes operates in this way, and when it does, its operation occasions very little irritation. Dr. Brocklesby informs us, that every night and morning a combination of one part of opium with three of ipecacuanha proved very serviceable. The ipecacuanha thus administered proved only gently laxative, whilst the opium composed the spasmodic affections of the intestines.

drops of laudanum to each, or more if it was necessary, provided it did not affect the head.

Some practioners when they dread a mortification of the large intestines, add antiseptic ingredients to the anodyne clysters. Mr. John Hunter (the author just mentioned informs us) often used antiseptic anodyne clysters with the best effects. He made the first trial with four ounces of a strong decoction of bark, with some grains of opium dissolved in it. He afterwards used with success a decoction of the tormentil root and of oak bark in the same way. The clysters were repeated if returned without allaying the tenesmus.

Some medicines are warmly recommended as means of allaying the griping, the operation of which it is not so easy to explain, unless we allow that their bulk, warmth, and gently tonic power may have the effect. Among the chief of these are lime water and an infusion of camomile flowers.* Other similar

* Dr. D. Monro gave the lime water mixed with milk, which proved serviceable to some; in other cases

similar infusions are recommended for the same purpose. We have reason to believe, that the warm water is the chief part of the remedy; for this, we shall find, has been recommended alone, and sometimes with success, as the only remedy.

When the excitement runs high, it is difficult to procure the proper expulsion of the fæces in dysentery. The same means which fail during such excitement often succeed when it has been reduced. To remove excitement therefore is, both on this account, and because nothing tends more to debilitate than the continuance of great excitement, an indication of much importance at the commencement of the disease.

The means of removing irritation, just considered, form an essential part of those

cases it failed. The infusion of camomile flowers seems preferable to lime water. Sir John Pringle says, that for mitigating the gripes and expelling wind, he has found nothing equal to fomentations and drinking camomile tea. And Zimmerman observes, that next to opium he found the infusion of camomile flowers the best means of alleviating the pains. Dr. Monro and others make similar observations.

which fulfil this part of the indication; but it is often necessary to have recourse to more active measures. It is to be recollected, however, that less is to be feared in this disease from an excess, than from a deficiency of excitement; the remedies, therefore, which moderate excitement, particularly the more powerful, are to be used with caution.

In warm climates, in particular, in this, as well as in other febrile diseases, even where there is a necessity for employing powerful antiphlogistic measures, they are often succeeded by sudden and dangerous debility. In colder climates such means may be employed with more safety, but have upon the whole perhaps been used more freely than experience seems to warrant. It is true, indeed, that some of the most powerful of these means, particularly emetics and cathartics, are employed in dysentery for other purposes, and even when the excitement is below the proper standard, their tendency to increase the debility being more than compensated by their relieving the local affection which supports the

the disease; the same may be said of diaphoretics; blood-letting, therefore, is the only evacuation recommended wholly with a view to diminish excitement.

The reader will find many speaking of blood-letting at the commencement of dysentery as necessary, in short, as a remedy to be had recourse to if all the remaining strength of the patient will bear it.* Such writers speak as if they expected from blood-letting some essential change in the state of the local affection, and therefore insist upon its employment wherever the general state of the system admits of it; and if an inflammation of the bowels always attended the commencement of dysentery, this expectation would be just. But this is rarely the case. Inflammation when it does attend dysentery, is the consequence,

* If the pulse and strength will permit it, says Lieutaud, begin the cure with blood-letting; and Akenside observes, that if the skin be hotter than usual, if there be rigors and the pulse is quicker than in health, there can be no doubt of the propriety of venesection. Observations from many other writers might be quoted to the same purpose.

not the cause of the disease, and therefore seldom supervenes early. Besides, those who recommend an indiscriminate use of the lancet in this disease, mention symptoms as warranting its employment which do not indicate inflammation.

What advantage, then, do we derive from blood-letting at the commencement of dysentery, except where the excitement runs so high as to threaten immediate danger or much subsequent debility? Has it been found particularly powerful in allaying the pains, in removing the peculiar state of the intestines in dysentery, or promoting the evacuation of the natural fæces? If not, what compensates for the debility it occasions? Instead, therefore, of letting blood in all cases where the strength can bear it, it will be found a maxim better supported by experience, to avoid it wherever the symptoms can be otherwise allayed.

Even where the excitement is not very great, if there be a considerable hemorrhagy from the bowels, which seems supported by the degree of excitement present, venesection is sometimes advisable. This, however,

ever, seldom happens; hemorrhagy from the bowels in dysentery generally proceeding from debility or ulceration. Inflammation of the intestines is known here, as in other cases, by the great severity of the pain and tenderness of the abdomen, and by a frequent, small, feeble pulse, more or less hard; symptoms which warrant blood-letting at all periods except in the last stage.* At this period of the disease, indeed, enteritis is not always accompanied with its usual symptoms. The tendency to gangrene is often so great that it supervenes on a degree of inflammation too slight materially to affect the state of the symptoms. I had occasion to explain in the introduction to the second part why, in very debilitated states of the system, gangrene often supervenes on slight degrees of inflam-

* "Nor were we discouraged," Dr. D. Monro observes, "from bleeding in the beginning by the low, "quick pulse, which often attended the disorder; and "we frequently found the pulse rise as the blood "flowed from the vein. But when the sick were low "and weak without much pain or fever, and the pulse "was soft, we were more sparing of the vital fluid."

mation,

mation, the inflammation bearing the same analogy to passive hemorrhagy, which inflammation, with a strong vis a tergo, bears to active hemorrhagy. In such cases it is evident that blood-letting would only add to the evil.

With regard to the employment of refrigerants as a means of lessening excitement, there is little to be added here to what I have so often had occasion to say. Nitre given in any considerable quantity seems too apt to irritate the bowels. Saline draughts in the state of effervescence are perhaps the best of this class of remedies in dysentery, and should be given freely wherever the heat and strength of pulse are considerable. Contrary to an opinion once very generally received, vegetable acids are often serviceable in dysentery, particularly where there is much prevalence of bile.

When the indication is to lessen excitement, the diet must be such as shall cooperate with the foregoing means; but of the diet in this disease I shall presently have occasion to speak at length.

Such

Such are the means of moderating excitement in dysentery; but the morbid state of the bowels is less frequently supported by increased excitement than by debility, the means of preventing and removing which form an essential part of the treatment of this disease. The debility, we found, is sometimes considerable from the commencement. In general, however, it is only in the more advanced stages that we have recourse to these means, namely, an invigorating diet and tonic medicines.

Our view is to support the strength with as little irritation as possible. A very full diet is generally too irritating, and too low a diet may induce a fatal debility. It is evident that no regulations respecting diet will apply to every case. It must be adapted to the state of the symptoms, the patient's habit, the nature of the epidemic, and the duration of the disease.

In all cases, perhaps, which have not been of long duration, the mildest diet is proper. The patient should be confined to gruel, sago, panada, &c. the quantity being regulated by the appetite. Sir George Baker

Baker and many others even forbid the use of chicken broth at the commencement.

Where the fever is slight, and there is reason to dread much debility, Dr. Akenside recommends not only different kinds of broths, but the milder kinds of animal food in a solid form. Few practitioners, however, admit of so full a diet. Sir John Pringle says, that he formerly used to permit dysenteric patients to take a little mutton broth, but finding even this hurtful he has since forbid the use of it. Dr. Cleghorn, Dr. D. Monro, Dr. Zimmerman, &c. make similar observations.

Fruit has frequently been regarded as a cause of dysentery, and consequently avoided in this disease, not, however, it would appear on sufficient grounds. Zimmerman observes, that grapes were an excellent remedy in the epidemic dysentery. Sir George Baker says, that those who had taken an usual quantity of the summer or autumnal fruits either wholly escaped the dysentery, or had it in a very mild form. Dr. Cullen thinks the use of fruits should be

chiefly

chiefly confined to the beginning of the disease. It is only, he observes, in the more advanced stages that the morbid acidity of the stomach seems to prevail, and requires some reserve in the use of acessants. Fruit is particularly indicated when there is much bile in the primæ viæ.

When the tendency of the epidemic to debility is not very great, but the affection of the bowels severe, it is often proper for the first days, during which for the most part there is little appetite, to advise the patient to take nothing but some thin fluid, thin gruel, whey, or any other mild liquor. Whatever, indeed, be the other articles of diet, he should always take a large proportion of some fluid of this kind, which seems pointed out by the incessant thirst that generally attends dysentery. The drink should be given tepid, any thing cold, particularly at an early period, is hurtful.

It appears from the observations of many, that at the commencement nothing is superior to mere warm water. On this part of the treatment I speak at length, because none

none seems to throw more light on the nature of the disease.*

It

* "But though all these substances," Sir John Pringle observes, "are of the softest and least heating "kind, yet I have observed the patient could not eat "any of them, nor swallow any of the liquors men-"tioned above, nor almost any other, except plain "warm water, without being sick or griped imme-"diately after. It was therefore natural to conclude "that till the stomach and bowels were able to bear "some stonger nourishment without sickness or pain, "nothing but water should be given for the whole "diet. In this notion I was confirmed by some "curious observations on the dysentery, communicated "to me about ten years ago by M. De Senac, who, "during my service in the Low Countries, in the former "war, was physician general to the French army, and "who by that means became well acquainted with the "distemper.

"The learned physician informed me, that having "had good evidence for believing that several had "been cured by only drinking large quantities of "warm water for five or six days together, he had "successfully made the experiment upon himself and "upon fourteen more who submitted to this regimen. "He added, that after having tried several other "methods without being satisfied with any of them, "he had at last fallen upon one which had answered "to his wish, and by which he had made numberless "cures. This, after evacuations by bleeding and by "a vomit of emetic tartar, consisted chiefly of one

"grain

It is to be recollected, however, that much dilution is debilitating, and should consequently be confined to an early period; even then, indeed, when the excitement is much and suddenly reduced, it must be

" grain of emetic tartar dissolved in a pint of common " whey or chicken water, given every day for all food, " drink, and medicine, till the patient recovered. His " intention was to keep a free passage from the " stomach to the rectum by the mildest laxative, which " he found was best answered by that minute quantity " of the antimonial." Zimmerman, Huxham, Degner, &c. agree with Sir John Pringle in the great advantage of plentiful dilution. With regard to washing away and allaying the bilious acrimony, Zimmerman observes, I considered copious drinking as very serviceable. Some old women indeed, he continues, of the last century were of opinion that a great part of the cure of dysentery consisted in abstaining from drinking, which in their opinion increased the purging. But the experience of later years has taught us, and very great physicians, Baglivi, Huxham, and Tissot, have maintained, that copious drinking is no where more necessary than in dysentery. Water when drank in great quantities is an universal remedy in this disease. A vast number of dysenteries, he observes a little lower, were cured only by taking a tea cup full of warm water every quarter of an hour.

employed

employed with caution. At more advanced periods, although the diet should never be irritating, it should be more solid. The milder kinds of animal food may be combined with farinaceous vegetables. If the former be found too irritating, the latter may be used alone, or the mucilaginous decoctions may be made of a thicker consistence. Where there is little appetite, however, harm may also be done in this way, by oppressing the stomach. Salep, arrow root, and sago have been particularly recommended. Their effects do not seem to differ materially from those of other farinaceous vegetables. Of the use of wine in dysentery I shall presently have occasion to speak.

With respect to the tonic medicines employed in dysentery, the tendency of this disease to inflammation has deterred many from employing them at any period, and at an early period they are generally hurtful, even where the debility is considerable. When dysentery, however, has been of some standing and has occasioned much debility, or is complicated with typhus or

with

with intermitting or remitting fevers, the bark seems often to have proved highly serviceable. Sir John Pringle recommends it with the serpentaria, or the serpentaria alone, when the fever is of a malignant nature.* Lautter, in his Historia Med. Bien. observes, that when the fever remitted, the urine depositing a lateritious sediment, however irregularly and however short the remissions, he immediately had recourse to the bark, which he gave in substance. Scarcely, he observes, had the

* "In 1760," he observes, "Dr. Whytt wrote to "me, that in this bad state of the dysentery, when the "mouth and alimentary canal were threatened with "aphthæ, and even sometimes after they had appeared, "he had successfully given the bark, having first made "such evacuations as the case required or the patient's "strength could bear, by blood-letting, vomiting with "ipecacuanha, and purging with rhubarb. That to a "pint of a strong decoction of the bark he added three "drams or half an ounce of confectio japonica, and "ordered two spoonfuls every four hours of this "medicine without any other, except some laudanum "at bed time. That when by the continued use "thereof the body became costive, he then gave "rhubarb, and after that went on with the decoction "of the bark, but with less of the confectio, or even "without it."

patient taken half an ounce when the stools became less frequent, the griping was allayed, the tenesmus, which formerly baffled all means which could be employed, almost wholly ceased, and the pulse at length lost its unusual frequency. Dr. Cullen, Dr. Cleghorn, and many others, make similar observations. "The great "similitude," the latter observes, "which "there is in many respects between tertian "fevers and dysenteries, induced me frequently to make use of the bark in the "last named disease. When the fever and "gripes were regularly exasperated, either "every day or every other day, at stated "periods, it has often effectually put a stop "to both, especially if the exacerbation "began with chilliness and terminated in "sweats; at other times it removed the "fever, the flux continuing without much "alteration." He adds, what we might have foreseen, "In some cases I have "given the bark, merely with a view to "prevent the mortification of the intestines "in the last stage of the distemper, but I

"am

"am sorry to say it was seldom so successful "as I could have wished."

That the bark is often highly useful in dysentery of long standing, which has occasioned much debility, particularly in those advanced in life, although it is complicated neither with typhus nor intermitting fever, appears from many observations. In such cases Dr. Akenside gave it combined with a cathartic. In all the foregoing cases it is often necessary to combine it with mucilage and opium, to prevent its irritating effects, especially when in the decline of the disease it renders the diarrhœa profuse.

The connessi* bark, the cortex eleutheriæ, and cascarilla,† seem also to be frequently useful in dysentery, particularly in the foregoing cases.

In the advanced stages when the debility is considerable, or earlier if typhus attends, wine has been found eminently useful.

* See the Observations of Dr. Brocklesby, and the Edinburgh Medical Essays, vol. iii, article 4.

† See the Memoirs de l'Academie des Sciences, a Paris, 1719, and Dr. D. Monro's Observations on the Diseases of the Army.

Dr. Brocklesby sometimes allowed his dysenteric patients a pint and a half of Port wine, or even more, every twenty-four hours. He diluted the wine with water, and generally gave aromatics along with it. Dr. Monro says he often found the wine increase the griping; when this happened, he ordered his patients half a gill or a gill of brandy, properly diluted with barley or rice-water.

Some object to the early use of Port wine, on account of its astringency; and Zimmerman and others to the use of all kinds of wine and distilled spirits at every period of the disease. Aromatics and wine, this author observes, excite a dangerous irritation in the bowels, increasing the pain, fever, and strangury.

It is probable, from comparing what Zimmerman says of these remedies with what is said of them by others, that he did not distinguish with sufficient care the cases in which they should be employed. If there be any considerable tendency to inflammation, and still more if the excitement is above the healthy degree, they will do

harm.

harm. And even where neither the excitement nor tendency to inflammation is great, if the bowels are irritable, wine must be given with a large proportion of mucilaginous and other substances, which blunt its pungency. It may be given in many cases when the bark in every form is improper. It is to be recollected, that the irritating and inflammatory tendency of wine bear a much smaller proportion to its tonic power than these qualities of the bark do to its tonic power. Distilled spirits should, if possible, be avoided.

With regard to aromatics, they have generally been given with the wine and bark. Some have condemned them in all cases as too irritating. They seem less adapted to dysentery than the latter medicines, since their tonic effects bear a much smaller proportion to the irritation they occasion.

Few recommend iron in any form of dysentery. In chronic cases it is said that zinc has sometimes proved serviceable.

The most essential part of the means of fulfilling the first indication in dysentery,

 remains

remains to be considered, the employment of cathartics. These are indicated at all periods of the disease, and all the other means which have been mentioned may be regarded as useful only as far as they conduce to their more certain, mild, and safe operation.

When the excitement runs high, or there is reason to suspect much tendency to inflammation, blood-letting must be employed; when the stomach is oppressed or the fever considerable, an emetic is proper; and when the debility is urgent, tonic medicines must immediately be had recourse to. With these exceptions, gentle cathartics are the first medicines we employ in this disease.

There has been much difference of opinion concerning the cathartics best suited to dysentery. Dr. Cullen justly observes, that as the cathartics must frequently be repeated, the most gentle are the safest, particularly on account of the tendency to enteritis.

There is no cathartic which has been so generally recommended in dysentery as rhubarb, although in several respects perhaps it is among the most improper. Both

Dr.

Dr. Cullen and Sir George Baker are of this opinion. It operates, the latter observes, slowly and weakly, and almost always with an increase of the griping and inflation of the bowels. Sir John Pringle proposes combining calomel with the rhubarb, by which, he observes, the operation of the latter is rendered easy. The addition of calomel, however, will not render rhubarb a proper cathartic in dysentery; and Sir George Baker remarks, that this combination will generally be found to answer the worse, the greater the proportion of rhubarb. Degner recommends the rhubarb in tincture taken in some watry fluid, which is perhaps more exceptionable than the powder.

Calomel alone has been much extolled, and where there is a tendency to inflammation it is perhaps one of the best cathartics in this disease; but it ought never to be given alone, its operation is always rendered both more certain and more easy by combining it with other cathartics. In many, particularly when taken alone, it occasions

tenesmus, and I have repeatedly seen it induce a temporary dysentery.

A diluted infusion of sena, mixed with a considerable proportion of manna in order to diminish as much as possible its tendency to griping, is an excellent cathartic in dysentery, though not always sufficiently powerful. Few cathartics have been more generally recommended, particularly by the army physicians, or seem to have answered better, than a combination of Glauber's salt, or the bitter purging salt with manna.*

* The following is Dr. Huck's method of giving them. "I used to purge with two ounces of manna "and one ounce of Glauber's salt dissolved in a quart of "water, whereof a quarter of a pint was drank every "half hour till it procured two or three copious "stools." (See Sir John Pringle's Observations on the Diseases of the Army.) This cathartic he repeated every third or fourth day, till the griping, &c. abated. Some physicians have added a little oil to this composition, that its operation might be rendered still more easy. Mucilage is preferable, as less apt to oppress the stomach. This medicine, it is probable, would be further improved by being prepared with a light infusion of sena. The greater the number of cathartics we combine, the more certain and easy their operation generally proves.

Cream

Cream of tartar has been much celebrated in dysentery. Zimmerman gave it with tamarinds. The latter he considers an admirable medicine in this disease, particularly where the stools are bilious.*

Upon the whole, however, no other cathartic has been so celebrated in dysentery as ipecacuanha given in small doses to prevent its proving emetic. Piso was the first who recommended it in dysentery; and it is now regarded as a specific in this disease. From the very many trials I have made with it, it appears to me to be the best of all cathartics in dysentery, which probably, in part at least, depends on the relaxation it induces on the skin, which is always accompanied with a tendency to similar relaxation in the alimentary canal. The antimonium tartarisatum has since been recom-

* Cream of tartar and tamarinds, he remarks, did not only occasion no pain, but very much diminished it, when they proved sufficiently purgative. They had also this advantage over rhubarb, that by means of their acidity they acted very powerfully against the putrid fever. He subjoins several cases, tending to shew the advantage of tamarinds in this disease.

mended,

mended, and is regarded by many as not inferior to ipecacuanha. Where the inflammatory tendency and the excitement are considerable, it is an excellent remedy, but seems upon the whole much inferior to the latter in relieving that peculiar state of the bowels, which appears to constitute the disease. The proper dose of these medicines is such as produces some degree of nausea without vomiting, and it should be repeated when the nausea abates.

I have already had occasion to make some observations on the use of clysters; they are proper, although cathartics be employed, by tending to allay the pain and irritation, particularly about the rectum, and to promote the operation of the cathartic; they should never, however, be substituted for the latter, but made as mild as possible, otherwise if they fail to move the bowels, by the irritation they occasion they may increase the disease.

Although we have procured an evacuation of the fæces, and consequently a remission, the patient is not to be regarded as secure against a renewal of the disease.

If

If the medicines are suddenly laid aside, it will return, and prove perhaps more dangerous and obstinate than at first. Their dose, therefore, should be gradually lessened, and the patient should be particularly cautious in abandoning the mild diet, so peculiarly necessary in this disease.

Dysentery, we have seen, frequently terminates in diarrhœa, and though this symptom is favourable, if no attention is paid to it, it may go too far and even produce a dangerous degree of debility, particularly after so severe a disease. When it is considerable, and particularly when at the same time the powers of the stomach are much weakened, it is often proper to have recourse to some mild astringent medicines. Small doses of kino or extract of logwood may be employed, and in the latter case they may be combined with a small quantity of the rust of iron. From what has been said of the nature of dysentery, the reader will readily perceive that these must be used with caution.

I have referred astringents to this place, notwithstanding their having been frequently

quently recommended with a view to remove the dysenteric symptoms, because if we except the tonic medicines above-mentioned, some of which are astringent, given in the cases which have been pointed out, there is hardly any medicine of this kind which seems to have been attended with much advantage while the dysenteric state of the intestines continued, and they have generally been found to increase the griping and tenesmus.* There seems to be but one case

* If astringents were useful, says Dr. Huck, (Sir John Pringle on the Diseases of the Army, p. 266) it was only when a laxity of the bowels remained after the disease. The old physicians, says Zimmerman, so far agreed with one another in the cure of the dysentery, that instead of trying to evacuate the matter, they chose unanimously rather to retain it, by incrassating and astringent remedies. Such notions, he continues, as are the produce of ignorance and folly, are not easily eradicated. If astringents be given too early, says Huxham, the worst symptoms follow. Dr. Cullen and most of the best modern writers on dysentery might be quoted to the same purpose.

The simaruba, which is a very gentle astringent if it at all deserve the name, has been regarded as a valuable specific in dysentery. It is the bark of an unknown

case in which mere astringents are proper while this state continues, namely, where there

unknown tree brought from Guiana in South America, where it has long been celebrated for the cure of dysentery. It was brought into Europe about the middle of the last century, and is said to have cured dysenteries which had resisted every other means. It is given in the dose of from half an ounce to an ounce of the decoction. Degner informs us, that he used this medicine with success after proper evacuations. It acts mildly, he observes, and almost insensibly, and produced its effects more certainly in the bloody than in the bilious discharges. He thought that its efficacy was increased by the addition of the cascarilla. Sir John Pringle made a few trials of the simaruba, which he says were in its favour; but he observes, that he only found it useful towards the decline of the disease. It seems to have been particularly useful when nothing but a diarrhœa remained, and at other times when the quantity of blood passed was very great. "In protracted cases," Dr. Brocklesby observes, "I tried the simaruba, to the quantity of "thirteen grains in powder, or a dram in decoction, "every six hours; and I really think it justly merits a "place in a military materia medica, to be used only "second to the bark in the flux, whilst yet a slight "feverish indisposition of the remitting kind continues "to harrass the patient. Nor did I pass over, alto- "gether

there is a copious discharge of blood, to check which, vitriolic acid and alum, and if the hemorrhagy is of the passive kind the bark, are the best.

Absorbents are also recommended in the decline of the disease, as acidity of the stomach chiefly prevails at this period. With these, as well as the astringents, opium is often combined with great advantage, particularly when the patient is still harrassed with griping.

It is not uncommon for some time, for slight but very troublesome renewals of the griping, tenesmus, and even mucous stools,

" gether unnoticed or unessayed, in such cases the " celebrated Tilicherry bark, now and then brought to " Europe from the coasts of Malabar, and there said " to be a sovereign remedy in slow fevers and fluxes. " But I did not find it answer here better than other " bitter aromatics, tending, in common with all that " class, to strengthen and restore the tone of the " solids, especially those of the primæ viæ. But it " proved too narcotic to be used as freely as the " simaruba, and I found it occasion in one patient the " spasmus cynicus when given to the amount of two " drams in 24 hours."

to

to take place. In these cases small doses of ipecacuanha with opiates, or even opiates alone, with a cathartic once at least in every three days, are often eminently serviceable.

For some time after the disease the patient should wear flannel next the skin, and ride on horseback or in a carriage according as his strength permits, carefully avoiding exposure to cold.

For strengthening the bowels after dysentery, the Bristol waters have been much recommended.

When there is reason to suspect that the disease has left an ulcer of the intestines, balsams, particularly the balsamum chiæ or copaivæ, rubbed with oils, have been employed, though seldom with success.* I had occasion to make some observations on ulcers of the intestines when speaking of the enteritis.

* See Dr. D. Monro's Obs. on the Dis. of the Army, and Dr. Mead's Monita et Præcept. Med. cum Notis Wintringhami, vol. i.

For

For removing the tenesmus which so frequently remains after the other symptoms of dysentery have disappeared, small mucilaginous and anodyne clysters, with occasional gentle cathartics to evacuate any irritating matter that may still be lodged in the alimentary canal, are the best means.

THE END.

APPENDIX.

APPENDIX.

AN

EXPERIMENTAL ESSAY,

ON

THE MANNER

IN WHICH

OPIUM AND TOBACCO

ACT ON THE

LIVING ANIMAL BODY.

FIRST PUBLISHED IN

1795.

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Experiments made with a View to determine the manner in which Opium acts on the Living Animal Body.

Experiments made with a View to determine the manner in which Tobacco acts on the Living Animal Body.

Observations on the Doctrine of the Sympathy of Nerves.

INTRODUCTION.

MANY of the first physiologists, both in Great Britain and other countries, have endeavoured to ascertain the manner in which opium acts on the living animal body; and to their assiduity we are indebted for a vast number of experiments on this subject.

But the inferences, which one author makes from his observations, generally contradict those of another; and the perplexity arising from this source is increased, by each having brought forward his own experiments and conclusions, without comparing them with those which had been made by others.

That I may avoid this error, I shall introduce the following paper, with a concise view of the state of our knowledge, concerning the action of opium on living animals, at the time my own experiments were begun. And, not to swell this part of the essay, by relating the arguments which each writer has used, in support of his own hypothesis, or against those of others; or by giving any account of experiments, since proved inaccurate, I shall merely collect together the few seeming facts which remain, after rejecting the useless and inconsistent observations in which they have been involved by the ingenuity of authors, and their partiality to particular opinions.

In various writers we find the effects of a moderate dose of opium on living animals accurately described;

most people have experienced them, indeed, in their own persons.

Soon after its exhibition it renders the pulse quicker and fuller, it produces relief from pain, and, in most instances, tranquillity of mind and refreshing sleep.

The effects of opium, like those of other drugs, become less considerable the longer the body is accustomed to it. Every person knows what quantities of opium are consumed by the inhabitants of many eastern countries. And even in our own we are every day meeting with people who have habituated themselves to a very free use of it. I have seen a man drink four ounces of laudanum, without his perceiving from it even a tendency to sleep.

Dr. Mead is among the earliest authors who have given an accurate account of the effects of an over-dose of opium.

In his Treatise on Poisons, first published in 1702, he relates the following experiment made on a dog. "When he had thus taken," says he, "as I could "guess, near two drams of the solution, I watched "him about an hour; then he began to sleep, but "presently started up with convulsions, fell into uni-"versal tremblings, his head constantly twitched and "shaking; he breathed short and with labour, lost "entirely the use, first of his hinder legs, then of his "fore ones, which were stiff and rigid like sticks. "As he lay snorting, to hasten his end, I was giving "him more of the solution, but on a sudden his limbs "grew limber and he died."

Tralles, in his elaborate work, *De Usu Opii*, gives nearly the same account of the effects of an over-dose of

of opium. But, as he describes these effects, such as he accidentally met with them, in the human body, his account of them is more interesting than that of most other authors. "Memini," he observes, "horrendis convulsionibus affectum infantulum; cui, per errorem, datus fuerat pulvillus, matri destinatus, granulum forte dimidium, extracti opii, habens." He quotes several other similar cases from different authors.

The convulsions, produced by an over-dose of opium (it has since been observed) are of a peculiar kind. In many respects they greatly resemble tetanus. They are of that species which has been termed tonic; have intermissions, and during these are renewed by the slightest touch. I have repeatedly seen them excited by a person walking across the room while the animal lay on the floor; and have always observed the convulsions from an over-dose of opium, in frogs and rabbits (the only animals on which I have made the experiment), assume the form of a true opisthotonos, without having ever perceived in them the least tendency to any other form of tetanus.

Dr. Alston, by means of the microscope, observed the velocity of the circulation suddenly diminished, on throwing a watery solution of opium into the stomach of a frog; but he has not stated accurately the time required for producing this effect.

He has also observed, that certain effects of opium, if it be given in large doses, very suddenly follow its exhibition. It has almost instantly produced sleep, relief from pain, from tenesmus, from vomiting, &c. From such observations Dr. Alston draws a very fair conclusion,

conclusion, that opium is capable of acting on the system in general, through the medium of the nerves to which it is directly applied.

He has likewise shown, that a solution of opium injected into a vein produces the same effects as when received into the stomach. In small quantity, it occasions no remarkable symptom; injected more freely, convulsions and death. It has been farther observed by various authors, that opium, applied to the brain, or injected into the heart and blood vessels, produces convulsions more speedily than when exhibited in any other way.

Dr. Alston found that opium thickens the blood when mixed with it out of the body. It was this probably which gave rise to the hypothesis of its occasioning death, by congealing the blood in the heart and large vessels. His paper on opium is in the fifth volume of the Edinburgh Medical Essays and Observations.

Such was nearly the sum of our knowledge concerning the action of opium on the living animal body, when Dr. Whytt published his treatise on this subject.

In stating the additional information which he gives us, I shall pass over in silence certain conclusions, which it may seem at first sight I ought to mention. On comparing them with the observations of later writers, however, we shall find them inaccurate, particularly those relating to the manner in which opium, applied to a distant part of the body, affects the motion of the heart.

These are more generally known, and have been more frequently referred to, than perhaps any other part

part of his treatise, notwithstanding they were, in a great measure, invalidated by the observations of Dr. Monro, as early as 1761; and have since been completely refuted by a very accurate experiment of Fontana's, made on a large scale. As this experiment is related in the Appendix to his work on Poisons, and consequently not referred to in the General Index, it has often been overlooked. In a treatise lately published on the influence discovered by Galvani, the author, in one part of his work, builds much of his reasoning on the conclusions of Dr. Whytt, which are here alluded to.

Dr. Whytt, as well as Haller, found the motion of the heart little affected by the application of a watery solution of opium to its external surface. But the former shewed, contrary to an opinion which once prevailed, that the heart is far from being wholly exempt from the influence of opium; and, what may seem curious, he found that a solution of this drug thrown into the stomach and intestines of a frog, affects its motion more speedily than decollation and the destruction of the spinal marrow; and, on the other hand, that a large dose of opium destroys the voluntary motions of this animal in a shorter time than cutting out the heart.

Dr. Whytt farther observed, that opium thrown into the stomach and intestines of a frog, or merely applied to its abdominal muscles, produces effects less powerful and sudden than when injected into the cavity of the abdomen.

Upon the whole, he remarks, opium produces all its effects

effects most speedily on those animals which cannot live long without a fresh supply of food and air.

By many of the experiments just alluded to, as well as by others, he confirms Dr. Alston's opinion, that opium produces many of its effects through the medium of the nerves, to which it is directly applied. To this action of opium probably is to be attributed the following fact, the last I shall mention from Dr. Whytt's treatise, namely, that opium, injected into the great intestines of a dog, affects the hinder extremities more speedily than the fore ones.

I cannot, however, conclude my observations, on what this subject derived from the labours of Dr. Whytt, without quoting from his paper the following passage, which, as far as I can judge, either from my own experiments or from those of others, contains one of the justest, and, at the same time, one of the most important observations concerning the action of opium on living animals I have any where met with.

"It remains, therefore, that opium, by affecting "the extremities of the nerves of the part to which it "is applied, does, by means of their connection and "sympathy with the brain and spinal marrow, destroy "or prevent, through the whole nervous system, the "operation of that power upon which depends sensa-"tion and motion in the bodies of animals." It is to be remarked, that Dr. Whytt does not here speak of the sympathy of nerves, but of their connection with the brain and spinal marrow.

Not long after the publication of Dr. Whytt's treatise, Dr. Monro published his observations on the same subject, in the third volume of the Essays and Observations,

Observations, Physical and Literary, of the Philosophical Society of Edinburgh.

Dr. Monro shews, that opium applied externally produces the same effects, as when thrown into the stomach and intestines, cavity of the abdomen, or blood vessels. He observes, page 306, "The effects "are, however, more speedy, where the dose is equal, "when the opium is applied inwardly, than when "applied outwardly, as might have been presumed "from the greater sensibility and delicacy of the "inward organs.

He has also shewn, that although opium, applied to a naked muscle, very suddenly destroys its power of contraction, yet, applied externally to a limb, while the skin is entire, it does not affect its muscles more speedily, or in a greater degree, than the muscles of any other part of the body.

Having observed the effects of opium on the entire animal, he wished to ascertain its effects when it acts merely on the part to which it is directly applied.

"But here," he observes, "we perceive an ob- "vious difficulty; for, if we stop the circulation in "every part of the body, by cutting out the heart, "or stop it one particular part, it is evident that the "animal will be dead, or the nerves will have lost "their energy in a great measure, if not entirely, "before the solution of opium can produce its effects "in a very observable manner."

This difficulty, however, was obviated in the following manner: Dr. Monro found, in conformity with what was observed by Dr. Alston, that on pouring 30 drops of a strong solution of opium through a hole

 made

made in the abdomen of a frog, the motion of the heart is so suddenly affected, that in the space of two minutes it beats with only half its usual frequency, and that, soon afterwards, all the muscles of voluntary motion are convulsed.

"Having, by this last experiment," he observes, "discovered a method by which this animal (the "frog) is affected to a violent degree with opium, in a "shorter time than that in which the energy of its "nerves is considerably impaired, by putting a stop to "the circulation; I could now determine, with certainty, whether this animal could be affected in that "violent degree, through the nerves to which the "opium was primarily applied, independent of absorption, and the circulation of the blood, by cutting "out the ventricle of the heart, and so stopping the "circulation, before I poured the solution into the "cavity of the abdomen; and on several trials, I "found, that the animal was in this way affected as in "the last experiment," (*i. e.* the animal was convulsed); "with this only difference, that it required "a somewhat longer time to produce these effects in "the same degree."

The author, in his comment on this experiment, observes, "As the animal was convulsed, and in a "short time killed, by pouring the solution into the "cavity of the abdomen, after cutting out the heart, "we have undeniable evidence, that there is a possible "way of applying opium, so that it may produce those "effects, through the nerves, to which it is primarily "applied, independent of its absorption and circula-

"tion

"tion with the blood, as Dr. Whytt, from a similar "experiment, first endeavoured to prove."

Dr. Monro has also shewn, that the same effects are produced by throwing the solution of opium into the heart, while the heart itself is instantly rendered paralytic.

"When we compare that part of the foregoing ex-"periment which relates to the heart," says the author, "with some experiments made by Dr. Whytt, "where the opium was applied to its outer part, we "see how greatly the delicacy of feeling of the inner "side of the heart exceeds that of the outer side." And in another place he observes, "We see how sud-"denly the whole body sympathises with the heart."

On looking over notes which I took from his lectures in 1789, I find it mentioned, that although the aorta be previously cut, a solution of opium thrown into the heart affects every part of the body. And in a late paper, entitled, *Experiments on the Nervous System with Opium and Metalline Substances, made chiefly with the view of determining the Nature and Effects of Animal Electricity*, he observes, "Many years ago, I "found, after cutting the venæ cavæ and aorta of a "frog, that a watery solution of opium, poured into "the heart, occasioned in a few minutes convulsions "in its legs; and after cutting out the heart, that the "opium poured into the cavity of the abdomen affected "the legs in like manner; although, in these experi-"ments, the circulation was not only interrupted, but "the greater part of the blood evacuated. I therefore "then concluded, and now conclude, that opium and "other poisons, even after they are mixed with the

"mass of blood, produce their fatal effects chiefly, "and almost solely, by acting on the nerves of the "heart and vascular system."

Yet Dr. Monro found, that opium, applied to the extremities, is not capable of affecting the whole system through the medium of the nerves.

But the most important point concerning the action of opium on living animals, established by this author, is its being received into the system by means of the absorbents; which, as far I can judge, he proves incontestibly, by shewing that the effects of opium, applied to a limb, after all communication between it and the rest of the body, by means of the nerves, is cut off, are soon felt in every part of the system.

Such are the circumstances relating to the action of opium on the living animal body, ascertained by Dr. Monro. The following conclusions, which I shall give in his own words, contain the leading opinions he formed on this subject.

"We may indeed perceive," says he, "that the "effects of all the foregoing medicines, (among which "opium is included), when they are applied to the "sound outer surface of the body, are chiefly owing "to their absorption, mixture, and conveyance with "the blood; since they operate as violently, and "nearly as soon, when the nerves of the part to which "they are applied are cut, as when they are entire.

"If, again, they are applied to the more sensible "inward surface of the primæ viæ, they may probably "operate more speedily, and in some cases more vio-"lently, through the nerves alone, than by their "being absorbed, and conveyed by the blood."

In

In another place he observes, "As the opium has a "surprising influence over the heart and arterious "system, when directly applied to them, and these "effects, though greater, are similar to the effects of "this medicine when absorbed, we may infer, that "when it is absorbed, mixed, and conveyed with "the blood, its effects are almost solely to be ascribed "to its operation on the nerves of the heart, and ves-"sels through which it is carried; and, by analogy, "the like is probable of many other medicines."

In his 12th corollary, he remarks, "We are to con-"sider, that the nerves of the heart, and large branches "of the vascular system, affected by medicines ab-"sorbed and conveyed by the blood, will influence by "sympathy other nerves of the body, to which these "medicines may not be able to penetrate through the "very small vessels."

"But," he observes in another of his corollaries, "it is difficult to determine whether we are to ascribe "the chief effects of opium on the sound animal to "its action on the nerves, to which it is immediately "applied, or to its absorption."

I shall quote but one more observation from Dr. Monro's paper. It deserves particular attention, (that part of it which relates to opium, indeed, is suggested by what has already been said) "That the effects of "an over-dose of opium, as well as of some other me-"dicines, on frogs, are analogous to their effects on "men and quadrupeds."

Fontana, the well-known Italian physiologist, makes a similar remark. This author, among numerous experiments relating to other subjects, has made many with opium on living animals.

Only

Only a small part of what he has done on this subject, however, falls to be taken notice of here. He does not seem well acquainted with what had been ascertained by the physiologists of this country, before he published his experiments; and frequently bestows much pains in endeavouring to prove, what has already been stated as proved by others.

His experiments, indeed, seem accurate, and many of them are made on a scale even more extensive than was necessary for ascertaining what he had in view; but he draws few conclusions; and the imperfect manner in which most of the experiments are related seldom admits of any, but those which the author makes from them.

This doubtless proceeded from his having in view to prove but one great fact, and neglecting (as every person in such circumstances is more or less apt to do) whatever did not tend to support or overthrow his favourite hypothesis. A few of his experiments deserve particular attention.

By one, made on no less than 300 frogs, he has ascertained, that opium applied to a nerve does not affect the muscles in which it terminates.

It is foreign to the plan which, for the sake of brevity, I have adopted, to comment upon the inference that Fontana draws from this experiment, "Que le "vehicule de l'opium est la circulation du sang et des "humeurs dans l'animal: et que sans elle l'opium "n'exerceroit aucune action sur corps vivant." It is directly contradicted by almost innumerable observations.

The following experiment of Fontana's is one of more

more consequence. It was alluded to when I was speaking of Dr. Whytt's Treatise on Opium. An experiment of this author suggested it to Fontana. I made (says the latter) a little opening in the scull of a certain number of frogs, through which I destroyed the brain and spinal marrow with a long pin. By performing the experiment in this way, rather than by cutting off the head, the great flow of blood which takes place in decollation was prevented; and consequently, in making experiments, frogs, with the nervous system destroyed in this way, can be more readily compared with the entire animal. Having then (he continues) made a certain number of frogs, thus prepared, swallow each a certain quantity of opium, and the same number of entire frogs swallow each the same quantity, I opened the thorax in all of them, in order to observe the motion of the heart. I observed its duration, and from time to time stimulated the crural nerves, both in the one set of frogs and in the other; and I can assert, that having used in this experiment 48 frogs, 24 with the brain and spinal marrow destroyed as above mentioned, and 24 entire, I could not perceive that the opium produced a less effect, or operated more slowly, on the one set of frogs than it did on the other.

"Je deduis cependent, de ces resultats," Fontana continues, "deux corollairs tres importans: Le premier est, que le mouvement du cœur ne depend "point des nerfs, ni de cet ensemble de sensations qui "constitue la vie de l'animal. Le second est, que "l'action de l'opium s'exerce independamment du "systeme nerveux."

The

The former of these inferences is made from other experiments. It is plain, that the latter is not warranted by that just related. The only conclusion we can draw from it, and one indeed which it is impossible for us not to draw from it, is, that the motion of the heart is not affected by opium, applied to a distant part of the body, through the medium of the nervous system.

It is easy to count the beats of the heart, but impossible to determine accurately the state of the muscles, by irritating the nerves which terminate in them. This part of the experiment lies open to much fallacy; and that Fontana was deceived in the inference which he draws from it, appears from many facts related in the subsequent part of this paper.

Fontana found, in another experiment made on 24 frogs, that opium, thrown into the stomach, more speedily impairs the motion of the limbs in the entire animal, than in one with the heart cut out.

Dr. Alexander published his thesis, entitled, "De "partibus corporis animalis quæ viribus opii parent," at Edinburgh, in 1790. He attempts to show, (contrary to what seems ascertained by several of Dr. Monro's experiments) that opium is never received into the system by means of the absorbents.

I think it necessary to mention this attempt, because Dr. Alexander's experiments have been made since the publication of Dr. Monro's. But how unsuccessful it is, must appear at first view to every person who peruses the thesis.

Nobody can compare together the 52d, 54th, and 56th experiments, and read the comment which in the 106th and 107th pages the author makes upon them, without

without some surprise at seeing a man of Dr. Alexander's ingenuity permit himself to be so evidently misled.

Can it be seriously asserted, that because a frog with the spinal marrow divided, and 30 drops of a solution of opium applied to the extremities, survived another whose heart was cut out, and to whose extremities the same quantity of the same solution was applied: Can it be asserted, I say, from this experiment, that none of the effects of opium depend upon its absorption? Is not cutting out the heart more suddenly fatal than the division of the spinal marrow? and shall we make no allowance for this circumstance in drawing our conclusions from the experiment?

Nor are his 59th and 60th experiments conclusive,* since opium, applied to the inferior extremities, operates very slowly on the system in general; and the injury done to the frogs in these experiments, previous to the application of the opium, was very considerable.†

From some of Dr. Alexander's experiments it appears, that universal convulsions are the consequence of throwing a solution of opium into the stomach and intestines of a frog, although the heart has been pre-

* Neither is Dr. Alexander's 51st experiment conclusive. The powers of absorption were probably deranged by the injury done to the part of the intestines on which the experiment was made. Besides, it was no easy matter to determine whether or not the lacteals contained a small quantity of the opium.

† Dr. Alexander was led, from his experiments on this head, to conclude, upon the whole, that although we cannot positively assert that opium is not absorbed, yet we have no proof of its being so, at least to such a degree as to kill.

 viously

viously removed. It was formerly observed, that Dr. Monro met with the same result, on injecting a solution of opium into the cavity of the abdomen, after cutting out the heart; but he speaks as if he did not meet with this result when the solution was thrown into the stomach and intestines.

Dr. Alexander shews, by many experiments, that opium, injected into the heart of a frog; or into the stomach and intestines, or under the skin, whether the heart has been previously removed or not; destroys the irritability of all the muscles of voluntary motion: but that it only produces the same effect on the muscles of involuntary motion when immediately applied to them.

He has also shewn, that if the nerves going to any limb be cut, the irritability of that limb remains after death, when the animal is killed by opium, in whatever manner applied, provided it has not been applied to the muscles of the limb itself.

As most of Dr. Alexander's experiments were made with a view to support or overturn certain hypothetical opinions, and as no inferences of consequence, except those relating to such opinions, can be drawn from them, few of this author's useful observations fall to be related here.

The last fact mentioned from Dr. Alexander's treatise is farther confirmed by Dr. Fowler, in his excellent publication above alluded to, who used, as a test of the irritability of the muscles, the influence lately discovered by Galvani.

It may not be useless to present, at one view, the most important facts which have been stated.

Opium,

Opium, applied to any part of a living animal, soon produces an aversion to motion, and a tendency to sleep. These effects often take place instantly when the dose is considerable, especially if it has been applied to a sensible part of the body.*

If the dose is sufficient to endanger life, convulsions soon succeed, which consist of repeated contractions and relaxations of all the muscles of voluntary motion.† In different cases the contractions are more or less permanent.

Throwing a solution of opium into the blood-vessels produces the same effects as applying it in any other manner. A small quantity may be given in this, as in every other way, without occasioning either convulsions or death.‡ Convulsions are the consequence of throwing a strong solution of opium into the heart of a frog, whether the venæ cavæ and aorta have been previously divided or not.§ The same solution thrown into the stomach and intestines, or into the cavity of the abdomen, after the heart is cut out, produces the same effect.||

After the brain and spinal marrow of a frog have been destroyed, without much loss of blood, a solution of opium, thrown into the stomach and intestines, affects the motion of the heart as readily as when the nervous system remains entire.¶ Opium, therefore, applied to a distant part, affects the motion of this

* Dr. Mead.
† Dr. Mead, Dr. Alston, Dr. Tralles, &c.
‡ Dr. Alston, Fontana, and Dr. Alexander.
§ Dr. Monro. || Dr. Monro and Dr. Alexander.
¶ Fontana.

organ through some other medium than that of the nervous system.

After all connexion, by means of the nerves, between the hinder limbs and trunk of a frog, is cut off, a solution of opium applied to these limbs produces the same effects on the body in general, as when their connexion with the trunk is entire. From which we conclude, that opium is received into the system by means of the absorbents.*

When we throw a strong solution of opium into the heart, it instantly becomes paralytic; nor can its action be renewed by any irritation whatever.†

The application of this solution to the muscles of the extremities produces the same effect on them. But if every thing forming the connexion between these and the trunk, except the nerves, be divided, its action extends no farther.‡

When it is thrown into the heart of a frog; or into the stomach and intestines, or under the skin, either before or after the heart is removed; it destroys the irritability of all the muscles of voluntary motion.||

Thrown into the cavity of the abdomen, it very suddenly renders the contractions of the heart less frequent,§ and produces all its other effects more speedily than when injected into the stomach and intestines, or merely applied to the abdominal muscles.¶

Lastly, it operates most speedily on those animals which cannot live long without a fresh supply of food and air.**

* Dr. Monro. † Dr. Monro. ‡ Dr. Monro.
|| Dr. Alexander. § Dr. Monro.
¶ Dr. Whytt and Dr. Monro. ** Dr. Whytt.

Such

Such may be considered the present state of our knowledge concerning the action of opium on the living animal body.

On reviewing what has been said, we still find the subject involved in much confusion.

Opium, it has been observed, so affects the nerves of the abdomen, stomach, and intestines, and those of the heart, as to act by what has been termed the Sympathy of Nerves, on every, the most distant part of the body, after the circulation is interrupted; and yet no action of opium on the nerves of the extremities produces the same effect. And although a solution of opium, directly applied to the heart, thus affects distant parts of the body, and the motion of this organ is almost immediately influenced by injecting the solution into the cavity of the abdomen, *i. e.* far more speedily than it could be through the medium of the absorbents; yet throwing a large quantity of opium into the stomach and intestines does not affect the motion of the heart through the medium of the nervous system.

These circumstances very nearly imply contradictions, and certainly do not tend to establish any general laws concerning the action of opium on living animals.

My reason for laying the following experiments before the public is, that they contradict many of the most essential of the foregoing circumstances; that they remove the seeming contradictions just stated; and that they seem to afford a very simple account of the modus operandi of opium on living animals; that is, to shew on what parts of the system this drug immediately acts in producing each of its effects,

effects, and that its action on these parts does not essentially differ from that of a vast number of other substances.

But I do not assert, that, because they remove these seeming contradictions, and afford a more simple account of the modus operandi of opium than those which have been related or alluded to, their results ought to be admitted.

The only means of arriving at certainty in experiments, where there is so much room for fallacy as in those I am speaking of, is frequently repeating them; and although the circumstances just mentioned tend doubtless to confirm the results of the following experiments, it is solely on this ground that I bring them forward, namely, that they have been much more frequently repeated than those from which opposite conclusions must be drawn.*

* I have explained above (vol. i, p. 257, second edition) why Dr. Crumpe's Treatise on Opium is not mentioned in this Essay.

EXPERIMENTS,

EXPERIMENTS, made with a view to determine the manner in which Opium acts on the Living Animal Body.

I BEGAN these experiments by repeating the most simple of those which had been made by others. Opium was applied to various parts of the entire animal, both external and internal, and the results found precisely such as various authors have stated them.

The animal constantly became affected with violent and universal spasms, which almost immediately followed the exhibition of the opium, when it was applied to the brain, or injected into the heart and blood-vessels.

After making many experiments which led to no useful conclusion, any account of which, therefore, would be improper, the following observation suggested several of those I am about to relate.

On throwing a solution of opium into the heart, I perceived it pass along the aorta towards the brain. Comparing this circumstance with the effects of opium applied to that organ, it appeared probable, that the convulsions which follow its injection into the heart and blood-vessels, are owing, not to any sympathy of the nerves of the heart with those of other parts of the body, but to the opium being conveyed through the aorta, and immediately applied to the brain. With a view to determine this point, I made the following experiments.

The

The solution used in the first and many of the other experiments was prepared in the following manner. One ounce of opium was triturated with two ounces of warm water, till a turbid mixture was formed; one ounce of cold water was afterwards added to it. This mixture was carefully corked, and exposed to a temperature of 90°* for 12 days. It was then filtered, and about two ounces and a half of a very strong solution obtained, which appeared almost black in a common two-ounce vial. This solution is stronger than that which was used either by Dr. Monro or Dr. Alexander. A weaker was prepared by mixing equal parts of this solution and water.†

After the aorta was secured by ligature in 12 frogs of different sizes, a few drops of the strong solution of opium were injected into the heart of each. It immediately ceased moving. This, however, was not followed by the slightest convulsion in any part of the body.

The frogs all died in exactly the same manner as these animals do when the heart is cut out; that is, when the circulation is interrupted, and when they lose as much blood as in this experiment. I could not perceive that the injection of the solution had any effect but that of putting a stop to the motion of the heart.

The irritability of the muscles of voluntary motion, after death, was found, in all of these frogs, as entire as it is after any death equally lingering.

* Of Farenheit's thermometer.

† In many of the following experiments, it is of no consequence to know the strength of the solution employed: it is not therefore attended to in these.

A similar experiment was made in the following manner: After dividing the aorta in ten frogs, most of them full grown, a few drops of a solution of opium, (not quite so strong as that used in the last experiment) were thrown into the heart of each. Its contractions instantly ceased, but no convulsions supervened.

I have neglected, I find, to mention in my notes the degree of irritability remaining, after death, in the muscles of these frogs. I seldom or never failed to examine it, however, and I recollect, that in all experiments of this kind, that is, in which a solution of opium was injected into the heart, after dividing the aorta, or securing it by ligature, the muscles of voluntary motion were readily thrown into contractions, after death, by irritating the nerves which terminate in them.

A circumstance which occurred in making this experiment, serves, in some measure, to account for others having met with a different result from it. Having divided the aorta, as I imagined, and injected some drops of the solution into the heart of a frog, I was surprised to observe, (contrary to what happened in the experiment just related) the animal seized with general convulsions.

When I examined the part of the aorta, however, at which the cut had been made, the cause of this difference of result was apparent. I had not completely divided the artery, the two ends still adhered by a slight connexion on the inner side of the vessel; and as the elasticity of its sides preserved its cavity, any fluid injected into the heart must in part have passed along this vessel to the brain. The consequence

would have been the same, it is evident, had the cut ends of the vessel been kept applied, or nearly so, by cellular membrane, or any other means.

I accidentally observed, in more than one instance, that convulsions did not supervene, when the solution was injected into the heart in very small quantity, and with very little force, although the aorta was neither divided nor secured by ligature. This mode of making the experiment is certainly more conclusive than either of the foregoing; since many of the nerves of the heart pass so near the aorta, that they must share its fate, when we divide or throw a ligature around this vessel.

But it is almost impossible to repeat the experiment frequently in this way with the same result. It is difficult to inject the solution in such a manner, that no part of it may pass into the aorta, or always to determine whether it does so or not.*

This, however, suggested another mode of making the experiment, which seems perfectly conclusive.

I slit the heart in six frogs. Notwithstanding its contents were thus instantly evacuated, it continued to contract with vigour. A little of the same solution used in the last experiment was then dropt into it.

* This mode of making the experiment, although its result is not always uniform, ought perhaps to be regarded as sufficiently conclusive. When convulsions follow the injection of the solution, we can readily account for their doing so, independently of any action of the opium on the nerves of the heart. And when they do not, how are those, who attribute these convulsions to what is termed sympathy of the nerves, to account for their absence, when the solution is injected into the heart, while the nerves of that organ, and those of every other part of the system, remain entire?

No

No part of the solution, applied in this way, can be sent through the arteries to the brain; but as almost all the nerves are left entire and uncompressed, if the convulsions which follow the injection of opium into the heart depend on any action of that drug on the nervous system, they ought to be observed in this experiment.

On the solution being dropped into the heart, it immediately ceased moving, but no convulsions supervened.

Lest it should be said, that stopping the circulation in the above-mentioned experiments, prevented the nervous system from undergoing the changes necessary for producing convulsions, the following were made.

The aorta in four frogs was secured by ligature, and the auricle wounded so as to permit the blood to escape; in other two, a ligature was thrown around all the vessels attached to the heart; and this organ was removed. The scull of each was then perforated; and, after wounding the brain in the first four, a little of the weaker solution was dropped into it. In the other two, a few drops of a stronger solution were applied to the surface of the brain.

In all of them the muscles of voluntary motion were seized with violent convulsions. They died, with precisely the same symptoms which follow the injection of opium into the heart when it passes along the aorta.

When the state of the muscles was examined after death, in the first four frogs, their irritability was found much impaired. I either did not examine the state of the muscles, after death, in the other two

 frogs,

frogs, on which the experiment was made at a different time, or neglected to take notice of it in my notes.

The frogs used in this experiment were of different sizes; two of the first four were full grown.

From these experiments, then, it appears, that opium, applied to the heart, is not capable of affecting any distant part, through the medium of the nervous system.

Another perplexity, however, relating to the action of opium on the heart, still remains to be unravelled.

Dr. Monro, it has been observed, found, that, by throwing a solution of opium into the cavity of the abdomen of a frog, the motion of the heart is almost immediately rendered less frequent; from which he concluded, and certainly not without reason, that opium, applied to a distant part of the body, affects the motion of the heart through the medium of the nervous system.

As this conclusion, however, contradicts the result of an experiment of Fontana's, above related, which was repeated much more frequently than Dr. Monro's, I suspected that there had been some fallacy in the latter.

I therefore repeated Dr. Monro's experiment more than once, but found the result as he has stated it. The beating of the heart became less frequent, almost immediately on the solutions being injected into the cavity of the abdomen.

It was still plain, however, that both the conclusion which has been drawn from this experiment, and that which Fontana draws from his, could not be just, as they directly contradict each other.

There

There seemed little doubt of the justness of Fontana's conclusion. That of the other appeared more questionable. In the former, it is only maintained, that a certain effect is not produced by the opium, because it is not observed to follow its exhibition. In the latter, it is not only maintained, that the opium produces a certain effect constantly observed to follow its exhibition, (an inference indeed as just as the other); but that it produces this effect in a particular way.

These circumstances led me to consider, whether or not there is any other way, in which a solution of opium, injected into the cavity of the abdomen, can be supposed to influence the motion of the heart, besides through the medium of the nervous system, or that of the absorbents.

A conjecture occurred to me, which is confirmed by several of the following experiments, that opium applied to the coats of the blood-vessels, by destroying their muscular power,* must affect the circulation in these vessels; and consequently, thrown into the cavity of the abdomen, influence the motion of the heart, by impeding, or entirely interrupting, that of the blood, in nearly one third of the whole animal; by which the supply to the heart is diminished, and a greater than usual obstacle opposed to its perfect evacuation.

The first circumstance, then, to be ascertained, is, whether opium applied immediately, or nearly so, to the blood-vessels of a living animal, impedes, or wholly

* Opium, it was found, destroys the power of action in all muscles to which it is immediately applied.

interrupts,

interrupts, the circulation in these vessels, independently of any general affection of the system.

It is to be observed, that in the following experiment, the opium is not applied immediately to the coats of the blood-vessels, but injected into a cavity, between which and these vessels a dense membrane of cellular substance is interposed. The skin of a frog, except in a few places, (chiefly the joints) does not adhere to the parts which lie beneath it.

Having adapted the web of a frog's foot to a microscope, I injected eight or ten drops of a solution, (nearly as strong as the stronger solution), under the skin of the leg.

In a few seconds the circulation became languid, and no motion could be perceived in some of the larger blood-vessels. It gradually became more obscure in the rest, till, in the space of about two or three minutes after the injection of the opium, it ceased altogether. Nor did this interruption of the circulation proceed from any general affection of the system, since the motion of the blood still continued in the other foot.

Lest it might be suspected that in applying the foot to the instrument, the vessels were compressed, it is proper to observe, that the circulation in the foot after it was applied to the microscope, continued as vigorous as before, till the solution was injected. On another occasion, indeed, I have observed the circulation in the foot of a frog, applied in the same way to the same microscope, continue vigorous for several hours.

This experiment was made three times, in the same manner, and with the same result.

After

After determining that opium is capable of interrupting the circulation in the part to which it is immediately applied, independently of any general affection of the system; all that is necessary in order to ascertain whether it is in this way that it suddenly affects the motion of the heart, when thrown into the cavity of the abdomen, is to interrupt the circulation, and observe the effects of this drug applied in the same way, for then, if the foregoing conjecture is just, it will no longer affect the motion of the heart.

The functions of the nervous system, it has already been observed, are not impaired in the frog, for a considerable time after the circulation is interrupted.*

I slit the heart in six frogs, so as to permit the blood to escape freely; and in about a minute after, threw eight or ten drops of the same solution, used in the last experiment, into the cavity of the abdomen, moving the tube, with which the injection was made, in various directions, that the solution might be applied as generally as possible. Little or none was returned.

In three of the frogs, the frequency of the heart's motion was the same after as before the injection of

* It may seem that I should, in the first place, have shewn, that diminishing the quantity of blood, supplied to the heart, is capable of diminishing the frequency of its contractions. An experiment of this kind is perhaps unnecessary, as the fact which it goes to prove is so generally admitted. But, that nothing may seem taken for granted, it will be found in the following experiment, that, after the ventricle of the heart was wounded, and thus a great part of the blood evacuated, the struggles of the animal, which increased the flow of blood to the heart, never failed at the same time to increase the frequency of its contractions.

the

the solution; in the other three, it became less frequent about a minute after it.

There is room for considerable fallacy in this experiment. Cutting the heart may render its contractions more frequent than natural, and consequently their frequency will diminish more rapidly than when the heart is left entire. Besides, I always observed, that the struggles of the animal, increasing the supply of blood to the heart, increased the frequency of its contractions; and as this supply was always becoming less, their frequency, on this account also, would be constantly diminishing. It is extremely probable, that the diminished frequency of the heart's motion, in three of the frogs, was not the effect of the opium, since it did not produce the same effect in the other three.

As it is possible, however, that some unperceived circumstances might have counteracted the effects of the opium on the first three frogs, it was necessary to repeat the experiment in a more conclusive manner.

I observed, that although, on securing the aorta by ligature, the heart is immediately distended with blood to a great degree, the frequency with which it beats after the operation, continues the same, or nearly so, for the space of four or five minutes. It is increased when the animal struggles; but there seemed no other circumstance to influence the result of the last experiment, performed in this way; and it was easy to make allowance for this.

After securing the aorta by ligature, therefore, in six frogs, and counting the beats of the heart, eight or ten, and in some fourteen or sixteen, drops of the same

same solution used in the last experiment, were injected into the cavity of the abdomen, the tube being moved in various directions, as formerly. Little or none was returned.

When the animal struggled, which most of them did the moment the injection was made, the frequency of the heart's motion was for a little increased. With this exception, it continued, in all of them, to beat with the same frequency after as before the injection of the solution, for the space of four or five minutes; at the end of this time, it began to lose several beats in the minute; but this was the consequence of securing the aorta, as I found by securing this vessel in other three frogs, without injecting any of the solution.

The inference from these experiments is, that the diminished frequency of the heart's motion, observed almost immediately on a solution of opium being thrown into the cavity of the abdomen, does not proceed from any action of the opium on this organ, through the medium of the nervous system, but from its impeding, or entirely interrupting, the circulation, in nearly one third of the whole animal.

Opium immediately applied, even to the brain itself, although it excites violent and universal convulsions in the muscles of voluntary motion, seems, from the following experiments, incapable of at all affecting the contractions of the heart.

I removed a piece of the cranium in two rabbits, about the size of a sixpence, and as much of the dura and pia mater as I could, without injuring the brain. After replacing the teguments, and joining the lips of the

the wound by a suture, about a drachm and a half of a solution of opium in water was injected under the skin. This mode of applying the opium to the brain I found very convenient: it was suggested to me by a gentleman present when I made this experiment.

Soon after the injection of the opium, the animals were seized with violent convulsions. But the motion of the heart, which I examined from time to time, was nôt in the least affected, except that it became more frequent when the muscles of the limbs were alternately contracted and relaxed.

In the space of some hours, the animals were reduced to a state of great debility, the muscles of voluntary motion being affected with a degree of paralysis. But the motion of the heart still continued strong and regular.

I thought I felt a slight irregularity in its motion in one of these rabbits, about an hour before its death, near twenty-four hours after the solution of opium was injected. This I could not again perceive, although I frequently examined the motion of the heart afterwards.

On opening the thorax of this rabbit, a few seconds after its death, I found the heart contracting regularly. The contractions of the ventricles continued for near ten minutes, gradually bcoming less vigorous. Those of the auricles were seen for a much longer time.

This rabbit had been considerably debilitated the day before the experiment, by a quantity of opium thrown into its stomach.

The other was quite healthy, and had rather more of the solution applied to its brain. It died in nine hours.

The

The heart of this rabbit beat strongly, and with perfect regularity, both during the spasms, and subsequent paralysis of the limbs. It was at last seized with very strong convulsions, in which it almost instantly expired.

Immediately after its death, I applied my hand to the thorax, and felt the heart beating regularly for a few seconds. Its beats, when the hand was first applied, were little inferior in strength to those of the heart of a healthy rabbit. In the other, the motion of the heart could not be perceived, after death, from the outside of the thorax.

It is a curious circumstance, that at the time the animals used in this experiment were thrown into convulsions by the slightest touch, their sensibility was so much impaired, that on running a knife through the foot of one of them, it showed no signs of pain; only starting convulsively, as it did when touched with the finger.

After removing a part of the cranium, and laying open the thorax, in seven frogs, I applied a little of a solution of opium to the brain, the muscles of voluntary motion were soon seized with the most violent spasms; but the motion of the heart continued perfectly natural, except when disturbed by the convulsions of the trunk and limbs.

It has been observed, that, during the remissions of these convulsions, a very slight irritation is capable of renewing them. But on irritating the heart, even roughly, in this experiment, I could excite no irregular contractions in it.

Dr. Monro informed me, that he had, for some

years past, performed the following experiment publicly in his Anatomical Theatre.

He injected a solution of opium in water, through a hole made in the cranium of a frog, in such a manner that it passed along the spinal marrow, and part of it came out at a hole made in the lower end of the spine. By this mode of applying the opium, the animal was instantly killed.

An experiment, in which the nervous system is so completely deranged by the action of opium, seemed well fitted for determining, whether this drug, applied to the brain and spinal marrow, is capable of directly influencing the motion of the heart. I therefore repeated the experiment in the following manner.

A hole was made in the cranium, and another in the lower end of the spine, in eight frogs; a strong solution of opium, in water, was then injected through the hole made in the cranium, in such a manner that it passed along the spinal marrow, and part of it came out by the hole in the spine.

Most of the frogs were deprived of sense and motion as soon as the solution was injected; in two or three it was necessary to repeat the injection before the same effect was produced on them; and although they all appeared for some time quite dead, in the space of two or three minutes most of them were seized with a trembling in the limbs, and some with strong spasms, which, during their intermissions, were not renewed by a slight irritation, as those are which follow the application of opium to the brain only. I observed, however, that when they had not previously taken place, they were often excited by laying open the

thorax.

thorax. This was done in all the frogs used in this experiment; and in those in which it excited convulsions, or trembling, as well as in those in which no motion whatever in the muscles of the trunk or limbs took place, after the injection of the solution, the motion of the heart was found as vigorous as it is in healthy frogs.*

The solution used in this experiment must be sufficiently strong to deprive the animal of motion, at least till the thorax is laid open; for I found in several other trials, that the uncommonly strong spasms induced on the limbs, when this is not the case, by rendering the circulation very irregular, and often, for some seconds, wholly interrupting it, greatly deranges the motion of the heart, by gorging it with blood; and seldom fails, more or less, to impair its vigour. So that, what at first sight might seem a paradox, a small

* A gentleman, who was present when I was making this experiment, having prepared a frog in the above manner, injected the caustic volatile alkali instead of the solution of opium. This also instantly deprived the animal of sense and motion; he then laid open the thorax, and shewed me the heart uncommonly pale, and its motion considerably weaker than that of the heart in a healthy rabbit. I was inclined to attribute this affection of the heart, however, to the acrid vapour of the alkali, (in which the frog was immersed, and which affected the eyes violently while we were examining the animal) being applied to this organ as soon as the thorax was laid open. I therefore laid open the thorax of a healthy frog, and exposed its heart to the same vapour, which immediately produced on it precisely the same effects. We then repeated the above experiment in the following manner: The caustic volatile alkali being injected as formerly, the animal was instantly deprived of sense and motion. It was then carefully washed, that the vapour of the alkali, after the thorax was laid open, might not be applied to the heart, which was now found as vigorous as that of a healthy frog.

quantity

quantity of opium, applied in this way, enfeebles the motion of the heart, while a larger quantity is incapable of at all affecting it.

The following manner of making this experiment is perhaps more conclusive: After making a hole in the cranium, and another in the lower part of the spine, the thorax was laid open, and the motion of the heart carefully observed, in seven frogs; I then injected the solution as formerly, by which the animals were instantly deprived of voluntary motion, and appeared quite dead; but the motion of the heart was not in the least affected; it continued with the same frequency and vigour, as before the injection of the solution.

All the frogs used in this experiment, some time after the injection of the solution, were seized with trembling, or convulsions, in the trunk and extremities.

I may observe, by the bye, that although irritating the brain mechanically, (like the application of opium to this organ), produces violent and universal convulsions in the muscles of voluntary motion, both in frogs and rabbits; yet I have found, that in neither the one nor the other it affects the motion of the heart.*

From the experiments which have been related, then, we arrive at this conclusion, that opium, applied to a distant part of the body, does not affect the motion of the heart, through the medium of the nervous system; nor, on the other hand, does opium, applied to the heart, affect any other part of the body, through the same medium.

* Fontana makes the same observation respecting frogs.

But

But the heart is not the only muscle which opium, applied to a distant part, seems incapable of affecting, through the medium of the nervous system.

Many considerations render it highly probable, that the same is true of all the muscles of involuntary motion, without exception. That it is so of the muscular coat of the alimentary canal, which, next to the heart, may be considered the chief of this class of muscles, appears from the following experiment.

The abdomen in several healthy rabbits was laid open, and the peristaltic motion of the intestines, which became very considerable a few seconds after they were exposed to the air, carefully observed.

A large portion of the cranium was removed in another rabbit, and the brain cut across its whole depth, in three directions. A small part of it also, which, after the cuts were made, projected beyond the edges of the bone, was removed. A solution of opium in water was then injected into the brain, by means of a small tube passed in various directions through its substance.

This was immediately followed by the most violent and universal convulsions of the muscles of voluntary motion, which, in the space of a minute or two, became quite rigid, and as hard as a piece of board. The animal lay with its head drawn back, its limbs extended, in short, affected with violent and complete tetanus.

In this situation, its abdomen was laid open, and the peristaltic motion of the intestines found, in all respects, similar to that observed in the other rabbits used in this experiment. I could not perceive that it

was

was stronger or weaker, more or less irregular, in the one case than in the other.

On examining this rabbit, twenty-five minutes after the solution was injected into its brain, I found the muscles of voluntary motion quite flaccid, and the animal dead. The motion of the intestines, however, was still strong in many parts of their tract, and continued so for thirty-six minutes longer, during which time I observed it. It was not again examined till forty-four minutes afterwards; the intestines were then cold and motionless.

In making this experiment, it is to be observed, that handling the intestines throws them into violent spasms, whether opium be applied to the brain or not; and that those parts which are most exposed to the air lose their motion soonest: so that it is necessary to raise these, and examine the parts which lie beneath them, if we wish to ascertain how long the peristaltic motion continues.

This motion, I may observe, like that of the heart, is not in the least affected by mechanically irritating the brain. In this experiment, the animal must be well secured, otherwise the violent convulsions, induced on the muscles of the limbs by agitating the intestines, will increase the peristaltic motion.

It has been shewn, that opium, applied to the external surface of the heart, very little, if at all, affects the muscular power of this organ; applied, in considerable quantity, to its internal surface, it immediately destroys it. In like manner, when it was applied to the external surface of the intestines, I could not be certain that it at all diminished the peristaltic motion:

motion: when it was injected into their cavity, they almost instantly became paralytic.*

On comparing the experiments which have been related, particularly the first related, with those in which opium thrown into the stomach and intestines, cavity of the abdomen, &c. is found to produce convulsions, I thought it probable, that in the latter cases, as in the former, the convulsions do not proceed from any action of the opium on the nerves of the part to which we apply it, but from its being received into the sanguiferous system, and immediately applied to the brain.

And this conjecture appeared the more probable, as the convulsions do not supervene for a considerable time after the exhibition of the opium, except when it is thrown into the sanguiferous system, or applied to the brain itself. In order to determine this point, and at the same time what effect opium produces, merely by its action on the nerves of the part to which it is applied, (if universal convulsions of the muscles of voluntary motion be not this effect) I made the following experiments.

It has more than once been observed, that the nervous system of the frog is capable of performing all its functions for a considerable time after the circulation is interrupted. A full-grown frog leaps about vigorously, for half an hour after the heart is cut out, by which not only the circulation is interrupted, but the greater part of the blood evacuated: And it generally conti-

* From this effect of opium on the internal surface of the intestines, we are at no loss to account for the costiveness which attends the use of this drug.

nues to leap, when irritated, for more than twice that time.

All that was necessary, therefore, to determine the point in question, was to cut out the heart, or otherwise interrupt the circulation, and then observe the effects of opium applied to the stomach and intestines, or injected into the cavity of the abdomen.

This experiment has been made, it was observed, by more than one author, and the result was general convulsions of the trunk and limbs.

As some unperceived circumstance, however, might have influenced the result of these experiments, such as, a small quantity of the solution of opium having been accidentally applied to the skin, before the heart was removed, (see the 2d experiment with tobacco, at the end of this paper) as the experiments were made on but a small number of frogs; and as those who made them do not altogether agree concerning the part to which the solution must be applied, in order to induce convulsions, after the heart is removed, I thought it worth while to repeat the experiment on a larger scale.

After cutting out the hearts of 24 frogs, I injected a solution of opium in water into the stomach and intestines of some of them, and into the cavity of the abdomen of others.*

Those

* Into the 1st, not full grown, 30 drops were injected; it died in half an hour: Into the 2d, not full grown, the same quantity; it died in 35 minutes: Into the 3d, the same quantity; it died in 51 minutes: Into the 4th, very young, 10 drops; it died in 25 minutes: Into the 5th, almost full grown, 30 drops; it died in an hour: Into the 6th, full grown, 30 drops;

Those which were of the same size, generally died the sooner, the greater the quantity of opium which had been injected. Young frogs die much more readily from injuries of this kind, than those which are full grown, as may be seen from several parts of this experiment.

The manner in which all these frogs died was precisely the same: Soon after the injection of the opium, they were seized with a degree of languor, generally proportioned to the quantity injected. Most of them, to a greater or less degree, recovered from this in the space of some minutes. The languor gradually returned and increased, till the frogs imperceptibly died, without the slightest convulsion in any part of the body. I neglected to examine the state of the muscles, after death, in the fourth frog used in this experiment; in all the others, they were found to

drops; it died in 55 minutes: Into the 7th, full grown, 60 drops; it died in an hour and two minutes: Into the 8th, full grown, 60 drops also; 8 or 10 were returned; it died in 58 minutes: Into the 9th, not quite full grown, 30 drops of the weaker solution; the time of its death was not observed: Into the 10th, very young, 10 drops of the weaker solution; it died in 54 minutes: Into the 11th, not full grown, 50 drops of the same solution; part was returned; the time of this frog's death was not observed: Into the 12th, very young, 10 drops of the same solution; part was returned; the time of its death was not observed: Into the 13th, not full grown, 26 drops of the same solution; it died in 59 minutes: Into the 14th, nearly full grown, 63 drops of the same solution; part was returned; it died in 52 minutes: Into the 15th, 20 drops of a solution nearly as strong as the strong solution: Into the 16th, 15 drops of the same solution; about 3 were returned; the time of the death of neither of the two last frogs was observed.

Solutions of various strengths were injected into the eight remaining frogs; into some a weaker, into others a stronger solution, than that employed in any of the above cases.

contract readily, on wounding the nerves which terminate in them.*

The foregoing experiment was repeated in the following manner. The thorax was laid open in eight frogs, and a ligature thrown around all the vessels attached to the heart: This organ was then removed, with the loss of no more blood than it happened to contain at the time the ligature was thrown around the vessels. A solution of opium was then injected into the cavity of the abdomen in all of them, through a hole made in the muscles.†

* Fifty drops of a very strong solution of opium in water, considerably stronger than the strong solution, was injected into the cavity of the abdomen, of one of the last eight frogs, full grown, the heart, as in the other cases, having been previously cut out. Part of the solution was returned when the animal moved.

For a few seconds after the injection of the solution, it leaped about with vigour; in a short time, however, it seemed incapable of leaping; and in the space of two minutes, was almost deprived of motion. It soon began to move again, and in eight minutes could leap about. Fifty-one minutes after the injection of the solution, it leaped on being much irritated. Twenty-eight minutes after this, it turned itself when laid on its back. It died in about an hour and twenty-eight minutes after the injection of the solution.

I have related this instance particularly, as it is remarkable for the great degree of languor which followed the injection of the opium, and for the length of time which the animal, notwithstanding this, survived the application of that drug.

† The solution injected into the first 6, was not quite so strong as the strong solution; that injected into the 7th and 8th, was stronger. All the frogs used in this experiment, except the 6th, were full grown. Into the 1st, 16 drops were injected: Into the 2d, 20 drops; about 2 or 3 of which were returned: Into the 3d, 16 drops; about 3 were returned: Into the 4th, 25 drops; about half was returned: Into the 5th, 8 drops: Into the 6th, 30 drops; part of which was returned: Into the 7th, 12 drops; part was returned: Into the 8th, 14 drops.

These

These frogs died in precisely the same manner as those used in the last experiment. The muscles of their limbs contracted readily after death, when the nerves terminating in them were irritated.

It appears from these experiments, that the effect of opium, when it acts only on the nerves of the part to which it is applied, is merely that of inducing a general languor, which, if the quantity applied be considerable, terminates in death. This effect of opium does not essentially differ from that of any other local irritation.*

From all that has been said, it appears, that the various effects of opium on the living animal body may be divided into three classes. The first, comprehending its action on the nerves of the part to which it is applied, does not differ essentially from that of any other local irritation. It is doubtful whether the impression made on the system by the action of opium on the nerves of the part to which it is applied, has ever been sufficient to destroy life. I have never seen it produce so remarkable an effect in any other case as in one above related.

A large quantity suddenly applied to a very extensive surface, is capable, perhaps, of instantly killing

* In man it has been shewn, that a large dose of opium produces sleep, merely by its action on the nerves of the part to which it is applied; so do other local irritations (mechanical injury not excepted) though more slowly. If it be this effect of opium which Dr. Whytt alludes to, when he says, that opium destroys the power of motion in every part of a frog, as speedily after as before the excision of the heart, the observation is just. From the nature of the experiments from which he draws the conclusion, however, he does not seem to allude to this effect of it.

animals

animals less tenacious of life than frogs are. Many strong impressions, such as those produced by receiving a large quantity of spirit of wine into the stomach, of very cold water when the body is overheated, &c. are well known to have occasioned sudden death. It seems to be a general law of the animal œconomy, that the effects of a strong irritation are at first very violent; but if they are withstood for a short time, they are afterwards borne with less inconvenience. It has just been shewn, how strikingly true this is of the effects of opium, when it acts only on the nerves of the part to which it is applied.

The second class comprehends its effects on the heart and blood-vessels; that of increasing their action, when applied in small quantity;* and that of impairing or altogether destroying their power of action, when applied to them more freely.† In neither of these effects, however, does the action of opium differ essentially from that of many other substances. Are not most acrid substances, in small quantity, capable of exciting strong contractions in the muscular fibre, and of destroying its power of action when ap-

* It has been observed, that a short time after we take a moderate dose of opium, the pulse becomes quicker and fuller; an effect, which, from the experiments that have been related, can only proceed from the opium being absorbed and immediately applied to the heart; since it has been proved that opium cannot affect the motion of this organ through the medium of the nervous system.

† It does not appear, that, by the largest dose, we can so increase the quantity of opium absorbed, as to be sufficient to destroy the muscular power of the heart, merely by its action on that organ. It may be safely asserted, perhaps, that opium never kills by destroying the muscular power of the heart, except when injected into it, or into the blood-vessels.

plied

plied more freely ?* Even mechanical irritation, applied in different degrees, produces the same effects.

The third class comprehends the effects which opium produces when immediately applied to the brain; when the dose is moderate, impaired sensibility, languor, sleep; effects observed in a greater or less degree, from other gentle irritations applied to this organ,. and which we do not perceive from a moderate dose of opium, till we know from the symptoms it produces, compared with the foregoing experiments, that it has been conveyed to the heart; from which, in the course of circulation, it is sent to the brain, as well as to the other parts of the body. What share its action on these parts has in producing the foregoing effects, it is impossible to say; we have reason to believe it but trifling: it appears from the experiments just related, that no part of them is to be ascribed to its action on the heart itself.†

Opium, applied more freely to the brain, produces the same effects which most violent stimuli, immediately applied to this organ, do, convulsions and death.‡ But the convulsions produced by opium, it has been shewn, are of a peculiar kind.

It

* But the tendency of different substances to increase or destroy the action of the muscular fibre is different. Tobacco, for instance, is more apt to destroy, and less apt to increase, its action, than opium.

† The increased determination of blood to the head indeed, in consequence of the stronger action of the heart, is found to dispose to sleep; but this, in the present case, may be overlooked, as the effects of the opium applied to the brain are so much more considerable.

‡ Opium does not always prove fatal, when it produces convulsions. I have seen a rabbit recover after violent convulsions

It may appear an omission, not to rank among the effects of opium received into the system, those it seems to produce on the muscles of voluntary motion. In some of the foregoing experiments, the irritability of these muscles was found much impaired after death; although the opium was not applied directly to the muscles themselves. The reason of this seeming omission will appear from the following observations.

Comparing Fontana's experiment (in which he found the irritability of the muscles as little impaired by the action of opium applied to the stomach and intestines of the entire animal, as to those of one with the heart cut out), with others which have been related, we should infer, that the presence of opium in the system scarcely, if at all, affects the irritability of the muscles of voluntary motion. From Dr. Alexander's experiments, on the other hand, we must conclude, that they are wholly deprived of their irritability by that drug, whether it be received into the system by means of the absorbents, or act merely on the nerves of the part to which it is directly applied.

Were I to trust to the accuracy of my own observations, I should dissent from both opinions. I have never found the irritability of these muscles wholly exhausted by opium, applied in any manner, except to the muscles themselves. Nor have I found, their irritability so little affected by the application of opium to the stomach and intestines in the entire animal, as in one with the heart cut out.

sions induced by a large dose of this drug. And instances are related in the Medical Museum, in which convulsions were induced by opium in the human body without proving fatal.

Upon

Upon the whole, the result of my experiments on this part of the subject has been, that if opium occasions convulsions, it impairs the irritability of the muscles of voluntary motion; if it does not, their irritability is not in the least affected by it.

From which it appears probable, that the impaired irritability of these muscles, observed in the former case, is the consequence of the violent contractions excited in them by the irritation applied to the brain, and not of any action of the opium on the muscles themselves. In order to determine the truth or fallacy of this opinion, I made the following experiment.

After injecting either into the stomach and intestines, or into the cavity of the abdomen, I forget which, (for I have lost the notes of this experiment) of two frogs, equal in size and vigour, the same quantity of opium; the one was kept free from every thing which, during the remission of the convulsions, might tend to renew them; so that they were rendered as moderate, and the remissions as long, as possible; in the other, as soon as a remission took place, the convulsions were renewed by slightly touching it; so that, although both frogs had taken the same quantity of opium, yet the one was affected with more violent and permanent convulsions than the other.

If, then, the impaired irritability of the muscles of voluntary motion, observed after death, when an animal is killed by opium, depends on the presence of this drug in the system, the state of these muscles in both the frogs used in this experiment should be found the same. If it be the consequence of the contractions excited in the muscles, it should be more observable in the one frog than in the other.

 The

The latter was found to be the case, in a very remarkable degree. I do not exactly remember how often this experiment was repeated; but recollect that it was not made above two or three times; so that its result can scarcely be regarded as certain. Some other experiments have been related, however, which tend to prove the same thing.

It was observed, that both Dr. Alexander and Dr. Fowler have shewn, that if the nerves going to any limb be divided before the solution of opium is exhibited, the muscles of this limb are neither affected with convulsions previous to death, nor is their irritability found impaired after it. Yet the opium is conveyed to them, in the course of circulation, as well as to those of any other part of the body.

The test of the degree of irritability remaining in the muscles after death, which was used in the foregoing experiments, is doubtless a very gross one: A nice test in these experiments would have been of little consequence, however; since the irritability seems affected by circumstances so various, that, without an infinite number of experiments, we could not ascertain to what the small differences, detected by such a test, are owing.

The influence, discovered by Galvani, appears at first sight an excellent test of the degree of irritability remaining in muscles, and has been used as such; but its laws seem at present too little known to permit us to employ it with much confidence in physiological inquiries. Instances might be adduced, in which the employment of this influence in physiological inquiries has already led to erroneous inferences, from our not being sufficiently acquainted with its laws.

The

The circumstances which seem chiefly to influence experiments, made on the irritability of frogs with the gross test I employed, are, *1st*, Their age, the irritability of young frogs being much more readily exhausted than that of such as are full grown. *2dly*, Their death being sudden or lingering, the latter leaving the irritability more impaired than the former. *3dly*, The time which the frogs are kept after being brought from the fields. The more vigorous frogs are, the more irritability their muscles possess. *4thly*, Throwing ligatures around the limbs. If a tight ligature be thrown around a limb, and kept applied for twenty minutes, or half an hour, immediately before the death of the animal, all the muscles beyond the ligature are found, after its death, quite void of irritability.

This cannot be attributed to the ligature pressing on the nerves of the limb, and cutting off its free communication with the brain, since dividing the nerves does not produce the same effect. It seems to depend on an accumulation of blood taking place in the muscles, (which are always found very red) owing to its return by the veins being prevented.

EXPERIMENTS, made with a view to determine the manner in which Tobacco acts on the Living Animal Body.

THE following Experiments may be deemed an useful addition to this Paper, because they tend both to confirm the results of those which have been related, and to establish some points concerning the action of tobacco on living animals.

The solution which was used in these experiments was prepared by exposing two ounces of tobacco with six ounces of water, in a phial carefully corked, to a temperature of 90°, for twenty-four hours.* It was then filtered, and near six ounces of a strong solution obtained, which appeared black in a common two-ounce phial.

A few drops of this solution were injected into the heart in four frogs, through a hole made in the auricle. The heart instantly became paralytic, and the animals were seized with the most violent trembling, and a complete loss of sense and motion in the eyes and fore-limbs; in some, the head was drawn back; and in all, every joint of the hinder-limbs was convulsively

* This mixture was exposed to the temperature mentioned for twenty-four hours only, as the active parts of tobacco are readily extracted by water, and I had found, from a former trial, that it it very apt to become putrid at so high a temperature.

bent

bent to the utmost; just the [illegible] of what happens in the extremities, when a solution of opium is injected in the same manner.

I had found from another experiment, that the frog is affected precisely in this way when the cranium is perforated, and the solution immediately applied to the brain.

After the aorta was secured in other four frogs, a few drops of the same solution were injected into the heart, through a hole made in the auricle. It was instantly deprived of motion; but the other symptoms, observed in the last experiment, did not supervene.*

No

* In the first frog used in this experiment, a circumstance occurred, which at first appeared quite unaccountable. Its eyes gradually lost their sensibility, till, in the space of about ten minutes, they could not by any irritation be excited to motion. This, however, they gradually recovered and preserved, as has been mentioned. While the eyes were thus affected, the fore-limbs also were to a considerable degree deprived of motion, which they too recovered.

These symptoms I could only attribute to a little of the solution remaining on my fingers, and the instrument employed in opening the thorax, which might have been conveyed to the mass of blood, and through this medium applied to the brain, before the aorta was secured. That this conjecture was just, appears from what happened to the other three frogs used in this experiment.

Having repeatedly washed my hands and the instrument with cold water, before I handled the next frog, very little of this affection was observed in it; and as it was allowed to lie about ten minutes after securing the aorta, the affection was at its height before the solution was injected into the heart, by which it was not in the least increased. It gradually went off, as in the former case.

Before touching the third frog used in this experiment, I washed my hands and the instrument with warm water and soap, which entirely prevented any affection, either of the eyes or fore-limbs, in it. Neither did this occur in the last

frog

No trembling n[illegible] spasmodic contractions of the muscles took p[illegible]e; [illegible]e frogs continued to move their fore-limbs and eyes, as long, and, in short, died in precisely the same way, as frogs do that die in consequence of the heart being cut out. In one of them, which was very large, the eyes moved when irritated for about two hours.

The state of the muscles after death was not examined in the first frog used in these experiments; in the other seven, they contracted readily, on wounding the nerves which terminate in them, except in one, which was very young, and which had lain dead a considerable time before the state of its muscles was examined.

Lest it should be said, that interrupting the circulation in the latter experiment prevented the tobacco producing the effects observed in the former, the following was made.

After the aorta was secured by ligature, and the blood permitted to escape, by wounding the auricle in three frogs, and cutting out the heart of a fourth, the cranium of each was perforated, and the solution applied to the brain.

They were all immediately seized with the most violent trembling; their fore-limbs became paralytic, and their eyes fixed, precisely as happened when the

frog on which the experiment was made, when I had not been previously handling the solution.

I take notice of these circumstances, because they not only shew, how small a quantity of tobacco is capable of affecting this animal, and how readily it is received into the mass of blood, but also suggest a necessary precaution in making such experiments.

solution

solution of tobacco was throw[illegible] the heart, without previously securing the aorta. T[illegible]ir [illegible]mbs contracted readily after death, on stimulating the nerves that go to them.

The following experiment was made, to shew the comparative effects of tobacco, applied to the intestines of the entire frog, and to those of the same animal with the heart cut out; where it can only act through the medium of the nerves of the part to which it is directly applied.

The first pair of frogs on which the experiment was made, were young, and very nearly of the same size; they were equally vigorous. Into the intestines of the larger, without removing the heart, twenty-eight drops of the solution were injected, the greater part of which was returned.

This frog was not examined till forty-two minutes after the injection of the solution; it was then found without any sign of life, except that, on suddenly letting fall the hinder-limbs, they were seized with a trembling motion, which lasted a few seconds. No motion could be excited in the eyes, and the fore-limbs were quite paralytic.

The heart of the other frog was removed, and twenty-two drops of the same solution injected into the intestines, very little of which was returned. This frog was affected with no trembling. It moved its eyes, when they were irritated, seventy-three minutes after the injection of the solution, and retained the motion of the fore-limbs, as long as that of the hinder ones.

When the nerves were irritated after death, the muscles

muscles contracted [illegible] in both these frogs. More of the solution was found in the latter than in the former.

The second pair were also young: they were of the same size, and equally vigorous.

Into the intestines of the first, without removing the heart, twenty-three drops of the same solution were injected; the half at least was returned. Twenty-two minutes after the injection of the solution, this frog was found in exactly the same situation in which the first of the last pair was found at the expiration of forty-two minutes. After removing the heart of the other, twenty-three drops were thrown into its intestines; fifty-eight minutes after the solution was injected, it moved its eyes when they were irritated. It died in the same manner as the second of the former pair. The irritability of the muscles in both remained after death.

Third pair. The result of this experiment in all respects resembled that of the last.

The fourth pair were full grown, and equal in size and vigour. The result of this experiment was again similar to that of the foregoing. The entire frog soon became affected with violent trembling. Fourteen minutes after the injection of the solution, no motion could be excited in the eyes, and the fore-limbs were paralytic. The other died as the second of the other pairs did. It moved its eyes eighty-nine minutes after the solution was injected.

As a large quantity (50 drops) was thrown into each of these frogs, the intestine gave way; so that the solution got into the cavity of the abdomen; and in the

the latter, part of it escaped b[illegible] opening at which the heart was extracted. Contractions were readily excited in the muscles of both after death.

The fifth pair were likewise full grown, and both frogs uncommonly large. The one whose heart was cut out was rather smaller than the other. They were equally vigorous. Sixty-four drops of the solution were injected into the intestines of each of them; which in this case also were ruptured in both frogs. None of the solution, however, was returned by the opening made for extracting the heart.

In six minutes the fore-limbs of the entire frog were paralytic, and no motion could be excited by irritating its eyes; the hinder-limbs were affected with very violent trembling, and at times with strong spasms, resembling those induced by opium. I have observed this in a less degree in other instances, when tobacco was thrown into the intestines of the entire frog. The muscles of the hinder-limbs of this frog were found, after death, almost quite void of irritability.

As for the other, it retained all its motions for fifty-three minutes after the solution was injected; those of the fore-limbs as perfectly as those of the hinder ones: its eyes moved, when irritated, nineteen minutes longer; and its muscles contracted after death with unusual force.

All the frogs used in this experiment became languid soon after the injection of the solution. In eight or ten minutes, however, they were considerably less so; precisely as happened in a similar experiment made with opium.

Whether the heart be previously removed or not,

 slight

slight convulsive t[illegible]c[illegible]ings (chiefly on the back) are sometimes observed immediately after injecting a strong solution of tobacco into the stomach and intestines, or cavity of the abdomen, of a frog, resembling those which often take place in the human body, from a violent local irritation. They are only to be perceived for a minute or two after the injection of the solution.

From the foregoing experiments with tobacco, then, it appears, that the symptoms which it produces, when thrown into the heart, are the same with those excited by its immediate application to the brain: that these symptoms, when the tobacco is exhibited in the former way, proceed from no action of the tobacco on the nerves of the heart, but from its being conveyed through the aorta, and immediately applied to the brain; since they do not follow its injection into the heart, when the aorta is previously secured by ligature, although it was found, that interrupting the circulation does not unfit the nervous system from undergoing the change necessary for the production of such symptoms. It also appears from these experiments, that tobacco produces the same effects, though more slowly, when thrown into the stomach and intestines, as when thrown into the heart; that in the former case, as in the latter, they are still to be ascribed to the tobacco being received into the sanguiferous system, and immediately applied to the brain; and that the effects of this drug, when it acts merely on the nerves of the part to which it is applied, do not essentially differ from those of any strong local irritation. It may also be collected from these experiments, that

that the presence of tobacco in the system, like that of opium, only affects the irritability of the muscles of voluntary motion, when it produces convulsions in them; *i. e.* when it is applied in considerable quantity to the brain. It appears, therefore, that the modus operandi of tobacco on the living animal body is analogous to that of opium.

May not poisons, in general, be divided into two classes: The first comprehending those which, applied to the sentient extremities of the nerves, produce effects on the system in general, not essentially different from the effects of mechanical irritation; but which seem incapable of any other action through the medium of the nerves, although applied to them after laceration; their effects on the system, when infused into a wound, differing only in degree from those produced by injecting them into any of the cavities of the body; such are opium, tobacco, and a great variety of other poisonous drugs: The second class comprehending the poisons which seem less apt to affect the sentient extremities of the nerves in the sound state, but, applied to lacerated nerves, produce through them effects essentially different from those of mere local irritation; such are the poison of the viper, that of rabid animals, and some others?

Observations on the Doctrine of the Sympathy of Nerves.

THE doctrine of the sympathy of nerves has been so much employed in accounting for the effects of opium, that a few observations upon it here may not be improper. Although there is scarcely any doctrine in medicine more implicitly received, it seems far from being fully established.*

The phenomena which have been referred to the sympathy of nerves, are those in which an involuntary motion, or a sensation, is produced in any part of the body by an irritation applied to the extremities† of the nerves, not of that part, but of some other;

* The following opinions concerning this doctrine were laid before the Royal Medical Society of Edinburgh, and ordered to be inserted in their books, on the 1st of February 1794. I mention this circumstance, because a work has appeared since the above date, in which, although the author maintains very different opinions on this head, there are one or two hints thrown out, to which, it might be thought, I should own some obligation.

† A sensation produced in any part, by stretching or compressing the trunk of the nerve which terminates in it, is no instance of the sympathy of nerves. If a nerve going to any part be compressed, the feeling of that part must be impaired. If a nerve be stretched, there must be a pain referred to its extremities, for the same reason that, were we to pull a muscle, we should excite a pain at its insertions. Is it a just inference from these facts, that an injury applied to the nerves of a stump will excite a pain referred to the extremity of the member that is lost? Has not confounding these facts with others referred to the sympathy of nerves, to which they bear no analogy, tended to perplex this subject?

such

such as the motion of the diaphragm in sneezing, produced by an irritation of the nares, a pain felt in the glans penis from an affection of the bladder,* &c.

These phenomena, then, may be divided into two classes; those in which *sensation*, and those in which *motion*, is the result. I shall, in the first place, consider the former, because under it the more numerous set of facts is included; and because, what I shall say of this class will be found useful when I speak of the other.

The following question is the first that presents itself, concerning which there can scarcely be two opinions. In what part of the system does that change take place, which is the immediate cause of sensation?

The immediate cause of sensations, either exists in the various parts to which they are referred, demonstrating that the sensorium commune pervades the whole system; or it does not, demonstrating that the sensorium commune is confined to a particular part of the system, to which every impression causing sensation is conveyed. Since one of these positions must be just, in order to establish either, it is sufficient to show, that the other is false. The question, then, resolves itself into this, Does the immediate cause of sensations exist in the parts to which they are referred?

When a man complains of a pain in the toes, after the limb has been amputated, is the immediate cause of the sensation in the part to which it is referred,

* With regard to those cases of sympathy in which the muscles of involuntary motion only are concerned, they do not fall to be considered here; since, in the present state of our knowledge, there is not a shadow of reason for attributing them to any connexion of nerves.

or

or elsewhere? No body can hesitate in answering this question. We have, therefore, an unequivocal instance, in which the immediate cause of sensation does not exist in the part to which it is referred.

But this is not a solitary fact, it is a general law of the animal œconomy, that we continue to refer various sensations to any part of the body, which is suddenly lost for some time after it is so. The fact is as evident in the loss of a finger, or in that of a tooth, as in the loss of a limb. Nor can it be shewn, why the immediate cause of sensation should so exist in these cases, and not in all.

From direct experiment, then, the conclusion is unavoidable, that the immediate cause of sensations does not exist in the parts to which they are referred, but in some other; that is, the sensorium does not pervade the whole system, but is confined to a particular part of it; and having advanced thus far, we know, from numberless observations, that this part is lodged somewhere within the cranium in man, and, by analogy, in the animals that resemble man. In some animals it seems partly lodged in the spine. It is this part, then, which is meant by the term sensorium commune, wherever it occurs in the present paper.

The next question which presents itself is, If the immediate cause of sensation exists in the sensorium commune, why do we very constantly refer the sensation to the part of the body on which the impression, causing it, is made.*

When

* The mode of reasoning employed in considering this question, though different, is similar to, and was suggested by, what

When we look at the various objects that surround us, we refer one to the distance of two feet, another to that of three, and so on, for no other reason, but that experience has taught us to connect certain sensations with certain distances. When we see two objects which we know to be nearly of the same tangible extension, for instance, two men, and yet observe, that the one occupies but the fourth of that part of the visible plain which is occupied by the other, we judge the former to be at twice the distance of the latter; if the former occupy but the ninth part of that space occupied by the other, we judge him to be at three times the distance; and so on. The degree of faintness, the number of intervening objects, and a few other circumstances, occasionally assist us when we judge of the distance of objects by the eye. But none of these circumstances are essentially connected with distance; it is only experience which has taught us to connect them in our minds.

Precisely the same thing takes place in the other case; there is no particular sensation essentially connected with any particular part of the body; but experience has taught us to connect certain sensations with certain parts:* so that to the sensation arising from every impression, there is something as it were superadded, which we have constantly observed attend all impressions made on the same part; and it is this

what Hartley says of the manner in which we refer sensations to particular parts of the body. See his Theory of the Human Mind.

* For the manner in which we at first discover the seat of impressions, see Hartley on the Human Mind, and others.

which

which teaches us to refer the sensation to that part; in the same manner as there is something, for instance, the degree of faintness, superadded to the appearance of all bodies at the same distance, which teaches us that they are at that distance.

And as, in the latter case, according to a well-known law of the animal œconomy, we attend to the distance of an object, overlooking the means by which we acquire a knowledge of its distance; so, in the former case, we attend to the injured part, overlooking the means by which we determine its position with respect to other parts of the body.

Is it said, that we have a power of referring sensations to particular parts of the body, independent of experience; the following common experiment is sufficient to convince us that we have not.

We refer sensations with little accuracy to parts of the body which we are not much accustomed to see, or otherwise distinguish from each other. If a person blind his eyes, and desire another to touch one of his small toes, he will find it quite impossible to tell which of them the person touches, and will not guess right much oftener than he would do, were the other touching one of four things, quite unconnected with his body.

We arrive, then, at this conclusion, that the immediate cause of sensations exists in the sensorium commune; and that they are referred to the parts, on which the impressions causing them are made, by experience alone.

We have all perceived, that the sensation arising from a pretty strong impression is not confined to the very

very spot to which the injury is applied, but is felt, at the same time, in surrounding parts.

It is also a fact, that the more sensible any of the surrounding parts is, the more, in general, it partakes of the sensation. Thus, in a person labouring under the stone in the bladder, the whole hypogastric region is pained. But the end of the urethra, glans penis, and testicle, parts endowed with very keen feeling, partake more of the sensation than any other.

By how many injuries applied to distant parts, is the stomach affected, which is perhaps the most sensible part of the system?

Inflamed sores, where there is a morbid degree of sensibility, are excellent examples of the same thing. If any part near such a sore be injured, the pain is felt more acutely in the sore than in the other neighbouring parts.*

But it is likewise a fact, that when any of the parts in the neighbourhood of that on which the impression is made, is a part of very acute feeling, while the injured part itself is one of comparatively dull feeling, the sensation excited in the former is often more intense than that excited in the latter.

We have instances of this in both the cases just stated: the pain excited in the sore is often more acute than that excited in the injured part, in its neighbourhood;

* The pain in affections of the liver being referred to the shoulder, and not to the stomach, the more sensible neighbouring part, seems an exception to the general rule. But it appears from many instances, that those parts are most apt to sympathise, which lie nearly in the same line from the brain. This, it is more than probable, is owing to such parts being supplied with nerves from neighbouring parts of this organ. We meet with idiosyncrasy in this as in other functions of the system.

hood; and that excited in the urethra, glans penis, and testicle, than the pain felt in the region of the bladder. When this takes place, as we attend to the stronger impression, and neglect the weaker, the former only is felt.

In all such cases, we refer the sensation from a less to a more sensible part; yet it is not at all times wholly confined to the latter; for when we attend particularly to the seat of the impression, we generally feel a sensation there, as well as in the more sensible distant part; but one so faint, that it is overlooked while the stronger sensation is present, except we endeavour to perceive it.

Upon the whole, then, we find, that the sensation is not always confined to the part on which the impression is made; that it is felt in surrounding parts, with various degrees of intensity, generally proportioned to their degrees of sensibility; and that it is sometimes more acute in the more sensible neighbouring parts, than in that to which the injury is applied.

But it has been shewn, that the immediate cause of every sensation exists, not in the part to which it is referred, but in the sensorium commune; and that the sensation is referred to the former, by experience alone.

When we compare these facts, the conclusion is unavoidable, that the phenomena, which are said to depend on the sympathy of nerves, as far as relates to those instances in which sensation only is concerned, proceed from certain changes induced on the sensorium commune, and depending on the two following circumstances; namely, different parts of the sensorium being endowed with different degrees of sensibility, and a change occasioned in one part being capable of inducing a similar change in some other; the sensa-

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tions caused by such changes, being each referred to its corresponding part of the body, in the manner above explained.

The application of the principles just laid down, to explain particular cases, in which the phenomena in question take place, is in general so evident, that it requires no illustration. I shall consider the only instance in which it is not so. One I have already had occasion to mention, in which we refer the sensation to a part that is separated from the body; and I shall take as an example of this, a person complaining of a pain in the toes, after the leg has been amputated.

Provided certain causes, capable of giving us a sensation, which we have been accustomed to refer to a certain part of the body, still continue to act, the sensation will be referred thither, whether the part itself exists or not, till a new experience overcome the former, and teach us not to refer any sensation to a part that is now lost.

It is evident from what has been said, that after the amputation of a limb, there still may exist in the body, causes capable of giving us sensations which we have been accustomed to refer to this limb; for we have been accustomed to refer to it, not only sensations from impressions made on the limb itself, but those from impressions made on parts in its neighbourhood. The pain excited by the irritation at the end of the stump, therefore, is referred to that part of the limb we have lost, as well as to the part which remains.

But it has been shewn, that of the parts in the neighbourhood of that on which the impression is made, those partake most of the sensation which are endowed with the keenest feeling. Of all the parts of the inferior extremities, the toes are the most sensible;

 on

on this account the injury done to the limb is felt more severely in them than in any other part of it.

No one would be surprised to find a person complaining of a pain in the toes, from a wound in any part of the leg, while it still remains attached to the body; yet, if the facts which have been stated be just, (and that they are so, cannot, I believe, be questioned) the pain, in both cases, is referred to the toes, for precisely the same reason.* With

* Speaking of a certain hypothesis, Dr. Darwin observes, in the 3d section of his Zoonomia, "There is another objection, that at first view would seem less easy to surmount. "After the amputation of a foot or a finger, it has frequently "happened, that an injury being offered to the stump of the "amputated limb, whether from cold, too great pressure, or "other accidents, the patient has complained of a sensation of "pain in the foot or finger that was cut off. Does not this "evince that all our ideas are excited in the brain, and not in "the organs of sense? This objection is answered by observing, that our ideas of the shape, place, and solidity of our "limbs, are acquired by our organs of touch and sight, which "are situated in our fingers and eyes, and not by any sensations "in the limb itself."

But how are sensations from impressions made on the stump associated with any idea of the fingers or toes? Such sensations have been associated with the idea of that part at which the limb was amputated. Dr. Darwin observes, indeed, in the next paragraph, "In this case the pain or sensation, which "formerly has arisen in the foot or toes, and been propagated "along the nerves to the central part of the sensorium, was at "the same time accompanied with a visible idea of the shape "and place, and with a tangible idea of the solidity of the "affected limb: now, when these nerves are afterwards affected by any injury done to the remaining stump with a "similar degree or kind of pain, the ideas of the shape, place, "or solidity of the lost limb, return by association; as these "ideas belong to the organs of sight and touch on which they "were first excited."

But after a leg is cut off, the cause of irritation at the end of the stump is not applied to the trunks of those nerves only that terminated in the part of which the patient complains, chiefly the toes, it is applied to the cut ends of all the nerves which went to any part of the amputated limb; so that, were Dr. Darwin's

With regard to the cases referred to sympathy of nerves, in which motion is the result, it may be observed, we every hour see the sensorium affected by impressions made on the nerves; and the consequence motion in various parts of the body, universally ascribed to the change produced in this part of the system. But why do we select certain motions, sneezing, vomiting, &c. excited by similar impressions, and alledge that they depend on other laws? Because the latter motions are involuntary. They are not wholly so, however; both vomiting and sneezing can often for a certain time be interrupted by the will. Besides, they are frequently interrupted, and vomiting even produced, by a strong affection of the mind. And are there not other motions generally admitted to depend on an affection of the sensorium commune, which have the same right to be referred to the sympathy of nerves? Tickling the sides, or soles of the feet, excites violent and completely involuntary motions. Yawning too, and many other similar motions, might be adduced as instances of the same kind.

But this mode of reasoning being laid aside, if it be granted, that the motions which have been referred to sympathy of nerves are not independent of the sensations which precede them, (and nobody, I believe, will assert that they are) it is a corollary from what was said of the cases of sympathy, in which sensation

Darwin's explanation just, not the idea of the toes only, but that equally of every part of the limb, should be associated with the pain at the end of the stump.

Besides, will it be seriously asserted, that were the organs of sight and touch destroyed, the foregoing sympathy could no longer exist! Does not every thing we know of the subject render such an opinion improbable? If the mode of reasoning adopted in the text be just, it is wholly set aside.

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is the result, that these motions proceed from affections of the sensorium commune.

Dr. Monro, who has paid more attention to this subject than most other authors, was led, by many observations, to this conclusion, "That, in general, the nerves of the body sympathise, not from their connexion in their progress, but from their connexion at their origin." I would only go a step farther, and say, that the nerves always sympathise from their connexion at their origin; which is the same as saying, that no such thing as the sympathy of nerves exists, and that all the phenomena, which have been referred to this supposed law, depend on affections of the sensorium commune.

But although we admit, (it may be said) that the immediate cause of all these phenomena exists in the sensorium commune, if it be found that those parts are most apt to sympathise, between which there is the most evident connexion of nerves, the connexion of nerves must be regarded as a mediate cause of the phenomena in question. But how slight, in many instances, is this connexion between parts which sympathise most? And where do we find it so evident as between parts which very rarely sympathise? What part, then, do the nerves act in the production of these phenomena? No other than they act in the production of all phenomena in which they are concerned, that of conveying impressions to the sensorium, or of conveying a somewhat (to use Dr. Monro's expression, in the present state of our knowledge the best perhaps we can use) from the sensorium to the muscles of voluntary motion.

CATALOGUE

CATALOGUE OF BOOKS,

WITH THE EDITIONS,

REFERRED TO IN THE FOREGOING WORK.

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